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Science & Technology

***USSR: Science &
Technology Policy***

Advantages of S&T Cooperatives Argued
18140118 Moscow SOVETSKAYA ROSSIYA
in Russian 12 Jan 89 p 4

[Interview with Candidate of Economic Sciences Georgiy Vladimirovich Gens, chairman of the Pronto Scientific and Technical Cooperative Center, by A. Nemov under the rubric "Why Does Science Need Cooperatives?": "The Algorithm of Demand"; date, place, and occasion not given; first two paragraphs are SOVETSKAYA ROSSIYA introduction]

[Text] Candidate of Economic Sciences G. Gens, chairman of the scientific and technical cooperative center, answers the questions of readers.

Hundreds of telephone calls came to the editorial office of SOVETSKAYA ROSSIYA after the publication of the report "The Impact of Pronto," in which an account was given of the establishment of the scientific cooperative with such a name. Many were interested in what tasks Pronto can accomplish; others were interested in how much it charges for its work; still others raised the question of the advisability of scientific cooperatives as such. As that time we promised to return without fail to this theme. Half a year has passed.

[Question] Georgiy Vladimirovich, as far as I know, your cooperation has earned during these months quite a great reputation. If only the fact that it was the only cooperative that took part in the All-Union Conference on the Increase of the Efficiency of the Work of Scientific Research Organizations of the Machine Building Complex of the Country Under the Conditions of Full Cost Accounting, testifies to this. But I would like to begin the conversation not with an account of what has been achieved, but with the problem of cooperative prices, for, as readers of the newspaper often write, the turnovers of many thousands of rubles of some cooperatives are connected first of all with the high prices for their products. And how much do your products cost?

[G. V. Gens] Apparently, I will have to disappoint someone: the prices for our products are most often lower than state prices.

[Question] This requires comment.

[G. V. Gens] By all means. We deal with the development of computer control systems for the most diverse sectors. We are introducing them in construction, health care, education, and science. What most often "strikes" production cooperatives and cooperatives in the service sphere? The high prices for raw materials, which then also creep into commodity prices. We have the only necessary resource for production—intelligence. Here we are on equal terms with state scientific research institutes. Incidentally, we even have an advantage—the head is lower, since there is no burden in the form of taxes. We have no need to train specialists, because we have already trained ones, most often the best ones in

their field. Associates of the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere (it, incidentally, is the guarantor of our cooperative) and scientific personnel of the Computer Center and the Central Economics and Mathematics Institute of the USSR Academy of Sciences, Moscow State University, and the Moscow Physical Technical Institute are working on orders of Pronto. In all about 150 scientists, mainly candidates and doctors of sciences, are among our most active members. The level of the specialists also determines the efficiency of their labor. Therefore, we succeeded in deriving the necessary profit with lower prices. This is a fundamental fact.

In my opinion, one of the important consequences of the establishment of scientific cooperatives is the appearance of competitors for scientific research institutes. For during the long years of their monopoly on technical and scientific developments many scientific research institutes lost their position in science. Now we are offering clients the solution of the same problems, here we guarantee high quality and quick fulfillment and, what is the primary thing, charge less money for this. I will cite several examples. We developed an information system for the All-Union Construction Trade Fair and Exhibition (the USSR State Construction Committee held it). By means of a personal computer any visitor of the exhibition was able to become acquainted with all the commercial offerings, to ascertain what demand one product or another enjoys, and to determine the most active buyers and sellers. For commercial operations this system proved to be very effective: contracts worth 100 million rubles were concluded at the exhibition. The organizer of the exhibition received from the total amount of the concluded deals 3 percent, that is, 3 million rubles. We supplied him the system for 12,000 rubles. A similar system was made for the movie market. Both of these systems were made in a few weeks and cost the clients considerably less than they had been willing to pay for this.

I want to note that if serious competition also arose between state organizations and cooperative organizations in the sphere of dining and consumer goods production, high prices would be out of the question (with allowance made, of course, for the fact that everyone would buy raw materials at the same prices). Imagine that in Moscow, for example 1,000 restaurants of such a class as the Natsional were opened: Do you think anyone would go to have dinner at cooperative cafes with their extra charge? Not on your life. The prices at the cooperative would immediately become lower. For the present we have, as before, a shortage of cafes and restaurants. The shortage is also preventing the reduction of prices. Here, incidentally, one can see well that the departments were not ready for the development of cooperation. Take the tossing and turning with the establishment of the system of taxation. Or for a long time no one thought about how to form market relations, including prices. But the "chaos" on the market of supply and demand also evoked a negative attitude toward cooperatives.

Only now have there appeared enforceable enactments, which make an attempt to give state support to the cooperatives which do work at prices lower than state prices, as well as to those who are working on tasks that are extremely important for all of society. World experience shows that the state is capable by economic methods (and not directive methods) of directing the development of cooperation, by skillfully uniting the interests of each and everyone.

[Question] The imperfect state of our legal and tax system enabled several cooperatives to derive real super-profits.

[G. V. Gens] This also applies to several scientific cooperatives. For example, in our country the marketing of programs has not been organized. They are rarely brought up by institutes to the industrial stage, to duplication. As a rule, they accumulate in the archive of the developers or in the funds of algorithms and programs. This enables "enterprising people" to sell the same program to different organizations each time as a new development. As a result fantastic earnings in the tens of thousands of rubles can appear. The record I know is 70,000 rubles for 2. How is one to combat this? There is only one way—by the quick introduction of the copyright in information science and the establishment of an information system of existing developments. But this reaches the point of absurdity—the algorithm, which is the basis for any program, so far cannot serve as the basis for the issuing of a certificate on an invention.

The fact that someone is reducing his activity to the conversion of "nonready" money into "ready" money, is also discrediting scientific cooperatives. For example, some enterprise wants to buy personal computers. It is practically impossible to get them without having foreign currency. Here one has to turn to the corresponding joint venture or cooperative. While there they jack up the contract (rather, the monopoly) price. As a result a computer, which in the West costs \$2,000-3,000, sells in our country for 50,000-100,000 rubles. Of which a substantial portion is used for wages. Comments are unnecessary.

[Question] The picture, which you have painted, is quite dismal. So, is one to tolerate such a situation?

[G. V. Gens] I think that competition and the market will put everything in its place. "Self-seeking" cooperatives will not survive long. Already now many of them cannot find clients. I want to hope that with computer hardware the situation in the country will also be straightened out soon. Scientific institutes, computer centers, and higher educational institutions—the guarantors of scientific and technical cooperatives—can do much. Being a guarantor is great responsibility: the state assigns to these organizations (in addition to local soviets and the corresponding inspectorates) the monitoring of the activity of cooperatives.

[Question] The decree of the USSR Council of Ministers, which obliges many cooperatives to conduct their activity precisely through contracts with state organizations, was recently published. The fear is being voiced that such a step will limit their possibilities.

[G. V. Gens] I would not be hasty with conclusions. For example, the initiative to establish Pronto came from the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere. What prompted the management of the institute to take such a step? First, the cooperative made it possible to gather quickly for the accomplishment of a posed task a hard-working group of scientists from various organizations. The institute prior to this did not have such an opportunity. Many consultations and, thus, much time are necessary in order to officially register the combining of jobs. The system of material incentives is also more thought out in the cooperative. One must also not disregard the following issue. The majority of associates of the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere "do not look about" any more in search of additional earnings. They can realize their potentials in the cooperative attached to the institute.

But how is one to make this union truly a union? You will not link a cooperative and an institute by any administrative steps. The relations should be economic. For example, the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere gave Pronto the opportunity to use the entire arsenal of computer hardware, but, of course, during nonworking time. And, it must be said, it is equipped with world class computers. In addition to this, the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere, especially at the start of the formation of the cooperative, turned over to it a number of very promising orders. Add to this the prestige of the institute, which immediately began to work for Pronto.

On the other hand, the orders of the institute are of the highest priority for us. Here are just a few joint works of late: the development of the Uchrezhdeniye Unified Automated System: "accountant," "planner," "personnel," and so on; the development of a testing system in health care—Poliklinika, Dispenser.

In short, we attempted to formulate such principles, from which everyone would gain. Incidentally, even the problem of monitoring working time did not cause us difficulties. No one is engaged in keeping track of whether the associate of the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere during the day is fulfilling an order of the cooperative or is working on a planned theme. We immediately stipulated—only workers, fulfill their own assignments, are enlisted for work contracts.

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The experience of Pronto showed that cooperatives and state organizations are not adversaries. While in a union they will work even more efficiently. I think that the existence of Pronto prompted the institute to the final decision on changing over to a lease. As of 1 January of this year the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere signed an agreement on this with the Ministry of Instrument Making, Automation Equipment, and Control Systems. The collective became the proprietor of the means of production. Now the results of the labor of scientific associates will begin to directly influence their material reward. Many innovations are being introduced, for example, in pension security. A scientist, who has retired because of age, receives a substantial allowance: the wage for 3 months, multiplied by the number of worked years. And the wage itself now also does not have limits. At the basis of all the calculations when changing over to a lease the main principle was as follows: the revenue of the state should increase more rapidly than the cost accounting revenue of the institute, while the revenue of the institute should increase more rapidly than the profits of associates.

And, what is the most interesting thing, the All-Union Scientific Research Institute of the Automation of Management in the Nonindustrial Sphere assigned to Pronto the order for the development of the model "The Institute on a Lease." At our cooperative center leading economists of the country worked on this theme. But the final adjustment of the new mechanism falls all the same to a specific collective of the institute, to its collective intellect.

The need for economic studies on the changeover of enterprises to cost accounting and a lease is being felt very keenly in the country. And whereas initially we did not attach great significance to this activity of the cooperative, now nearly a third of our orders are from this sphere. Most often we are confronted with complete economic ignorance. Many people for some reason believe that cost accounting is when the wage is increased and here everything remains unchanged. But the changeover of enterprises to the new economic line is an extremely difficult procedure. For example, our scientific cooperative center first makes a detailed study of the organization. A "microscopic section" of all the levels of management is made, calculations are made. We enlist in this work economists, mathematicians.

[Question] Georgiy Vladimirovich, I would like to return to the start of our conversation, to the All-Union Conference on the Increase of the Efficiency of the Work of Scientific Research Organizations. What did participation in it give you?

[G. V. Gens] You know, after it I revised several of my own views on scientific cooperatives. It seemed to me that they should act only like the small and little consulting, intermediary, research firms in the West. Deputy Chairman of the USSR Council of Ministers I.S. Silayev

believed otherwise. He proposed to set to work on major, state problems. After the conference I tried to objectively examine his arguments. Now I believe that the approach, which was proposed by I.S. Silayev, is very promising.

GKNT, Ministries Attacked as Outmoded Structures

18140102b Moscow *IZVESTIYA* in Russian
28 Dec 88 p 2

[Article by I. Reshetnikov under the rubric "Science and Restructuring": "Is the Revolution Under Seal?"]

[Text] We have heard a lot about the fact that we live in the age of the scientific and technical revolution. But try to look with partiality round your own apartment, and if you find signs of this revolution, they are most likely of the imported version. The sources of this supermodesty must be sought at scientific research institutes, plants, and factories. The latest report of the State Committee for Science and Technology [GKNT] splendidly illustrates what is happening there.

It, this report, again and again forces us to ask the old damned question: Why in our state, which is not wanting in resources and talented people, do modern Kulibins and Cherepanovs suffer for years in the antechambers of officials from science and production? Why do their ideas, not having had time to be embodied in metal, grow old at the gatekeeper's office of plants and factories? After all, no matter what we said about the loss of the former positions in basic research, the true creators had time to invent much of what could change our life beyond recognition. And not at all during the third millennium.

Back in the 1970's, economists of the Novosibirsk Academy Campus distinguished in the country about 100 technologies of the latest generation, which were ready for introduction. Another 200-250 were on the approach—a reserve of the immediate future. It is interesting what the innovations promised in the sense of efficiency.

At first, not yet united into complete systems, these machines promised to increase labor productivity by 1.5- to 2-fold. What is fundamental, they simultaneously diverted much fewer specific capital investments, materials, and power. At the second stage they optimized the power and increased the reliability of the systems. And the ultimate efficiency increased by another two- to threefold. Finally, after the automation of processes the efficiency increased by the same amount again.

The result was impressive: an increase of fifteen-to twenty-fivefold, and often sixty-to seventyfold. While if you also take into account the advantage, which was derived from the new product by the consumer, this result will be even greater.

How did we reach the point that these miraculous innovations, which are capable of shifting enormous resources to the improvement of the life of the people, are becoming obsolete in single specimens, or else entirely on paper? The general answer is well known—departmental barriers interfere. They rise high above as impregnable bastions.

But a revolution in management ideally should have immediately followed the technological revolution, and not have dragged along in the rear wagon. I will mention briefly the reasons for its inevitability.

The point is that the sectorial structure of the national economy formed during the period of industrialization and completely conformed to its peculiarities and to the mechanization of simple operations. But the technologies of the age of the scientific and technical revolution are different in principle. They originated at the meeting point of many sciences, as a result of the comprehension of matter at the atomic and molecular levels. And it was sufficient, having armed oneself with this knowledge, to influence the main operation in nearly any process, that it changed beyond recognition. It turned out, for example, that it is far more profitable to spin some parts at one stroke than to turn them with a cutting tool. And one special unit sent into retirement tens of lathes. Take hydraulic mines—there they do not mine coal as in the old days, but cut and transport it with water. Here is an entirely fantastic example—nanotechnology (nano is from Greek—dwarf). Today chemists even at the microscopic level manipulate only hundreds of thousands of atoms. While nanotechnologists intend to perform individual operations with single atoms. U.S. scientists emphasize that it is a question, for example, of the designing of computers, which are a trillionfold more productive and a millionfold more economical than computers of today.

Of course, such equipment fits in with the sectorial systems half a century old in approximately the same way as a computer program does with a multiplication table. These contradictions cry out already when new ideas are in swaddling clothes, that is, in academic laboratories. For a peculiarity of discoveries of our times is that an entire bunch of technologies ripens on the basis of each one, like on a grapevine.

Here is a model example. I closely familiarized myself with and wrote about the discovery in the 1970's by the Institute of Catalysis of the Siberian Department of the USSR Academy of Sciences of catalytic heat generators (KGT's). They literally revolutionize the combustion of traditional types of fuel: they increase the heat utilization factor from 40 to 80 percent. Technologies based on catalytic heat generators ought to be used in almost all spheres of the national economy. But who will determine these spheres? Thus far there are no such organizations. And who will develop the entire range of technologies? Thus far there are also no such scientific research institutes. The ones that do exist are aimed only at "their own" sectors. Therefore, the

technologies based on catalytic heat generators for a second decade are at pilot-scale industrial plants.

Sectors today are a powerful force. Two-thirds of all the scientists of the country are there, more than 70 percent of the assets, which are released to science, go there. In a recent interview with one central newspaper I.S. Silayev, deputy chairman of the USSR Council of Ministers and chairman of the Bureau of the USSR Council of Ministers for Machine Building, declared that it is also proposed to channel into sectors the lion's share of the additional assets for science. But we see how precious innovative ideas are floundering in the interdepartmental web and are wandering along endless vertical lines, inasmuch as they are powerless to make a hole in the very fat barriers along horizontal lines. The analysis of economists showed: complex systems of mining machines take 25-30 years to develop in our country. Consultations eat up a third of the time—up to 10 years! Is that not why in the United States and other countries the complete mechanization of mines was completed in the 1970's, while in our country to this day it comes to only 75 percent?

A second time, after origination, innovations clash at the stage of introduction with the old sectorial system, this burden of inherited diseases. And for many this clash is fatal. Academician Yu. Nesterikhin does not get tired of repeating that sectorial knives are hacking the child of the scientific and technical revolution into pieces. This is a somewhat terrifying metaphor, but, alas, it is the harsh prose of life. The point is that individual systems, like streams, flow together at the level of the national economy into so-called metasystems or conglomerates. Professor V. Muchkin, who during the last years of his life worked at the Institute of Economics and Organization of Industrial Production of the Siberian Department of the USSR Academy of Sciences, showed this brilliantly in his theory of technologies. For example, new methods of the smelting and teeming of steel in a single flow are being combined with the rolling of parts that are typical of all machine building. Together with the gain for the consumer we obtain an exorbitant impact: more than seventyfold of the initial level! The impact is not on paper. In Dneprodzerzhinsk a shop with special mills of the All-Union Scientific Research, Planning, and Design Institute of Metallurgical Machine Building has been operating for more than 10 years. The same result was also obtained in Japan, only not in a shop, but at an entire plant. But try to build these enterprises of the future not as an experiment. The Ministry of Ferrous Metallurgy will immediately declare: Parts? And in mass series? It is not our specialization!

I cited an example with respect to a simple metasystem. What is to be said about complex ones, which unite innovations that are listed today with four or five departments? At healthy enterprises, as they say, there is a sickly number. That is why it is possible to find the lion's share of developments to be introduced at only one to three enterprises of the country. Like the mentioned

report of the State Committee for Science and Technology, these innovations exist as if for official use, without making the socioeconomic "weather" in society.

We are making up a heap of programs like pancakes and are baking scientific and technical programs of different caliber. While we are managing them, contrary to textbooks and world experience, on a public basis. And we are still amazed: Why is it not turning out? Although the only thing to do is to be amazed at a quite different thing: Why at times does something still turn out? We are unsuccessfully squeezing interbranch scientific technical complexes into sectorial systems and are indignant: Why are they being torn away by the moss-covered organism, as if it can be otherwise? We are reviving sectorial ministries with a persistence that is worthy of better use. We have restored various bureaus of the USSR Council of Ministers, having completely forgotten that we had already gone through this in the late 1940's and had rejected the superdepartmental superstructure for uselessness.

I will venture to assert that the people, who determine the strategy and tactic of the restructuring of management, are under the thumb of the sectors and are striving to preserve them in any shape or form, by allotting them functions that are alien to them by nature. From where, for example, did the hopes emerge that sectorial headquarters would suddenly switch to the implementation of the strategy of the scientific and technical revolution?

First, each ministry has "its own" progress—creeping evolution. One can also not do without it. But now society needs a hundred time more a revolution in technology! The alternative is precisely here: either a turn toward a life, which is worthy of the Soviet individual, or vegetation in the state of a developing country.

Second, in conformity with the Law on the Enterprise, ministries will be responsible for a long time to come for the results of the activity of their subdivisions. Hence, away with revolutionary technologies. For whatever sermons we give, the operations plan and the plan will be in first place in them. Only they bring prizes, orders, and banners. But next to the plan the gross will prosper without fail, it does not matter in what abundance. Why will it survive? Because the gross is the only lever, by means of which it is possible to create the illusion of the efficient management from one center of enterprises from Brest to Vladivostok. The gross and centralized management are twin brothers. In exactly the same way, incidentally, as ministries and the scientific and technical revolution are antipodes. Will ministers really knock out from under themselves in this way the chair, on which they sit so high and comfortably?

Especially as they, perhaps unconsciously, but all the same are strengthening this chair. In directive documents the orientation toward the gross is being preserved and even strengthened. Thus, I.S. Silayev declared in the already mentioned interview that during this five-year plan machine building has to accomplish simultaneously

two tasks: "...to achieve high rates of the production volumes and to attain the world level with respect to quality indicators." The pursuit of two so important "hares" will never lead to success. Which, apparently, I.S. Silayev himself also understands, cautiously calling these tasks "hard to combine." And, true, inasmuch as the system through inertia is pursuing the gross, it is easy to guess that preference will also be given to it in the future. But today quantity is a fundamentally different quality of technologies. Without having rejected in the name of this single goal all other goals, whatever this costs, and without decisively and strictly restructuring for it the entire system of management, we are doomed to shake the air with empty declarations and to look with anguish at empty shelves.

Finally, in case of living sectors we will wait for ever and ever for the breaking up of monopolist enterprises and, thus, healthy competition. After all, the main monopolist is the sector itself.

Nevertheless, many economists and prominent managers do not imagine our economy without sectors. One of the main arguments in their defense is that otherwise, they say, the structural reform of industry is impossible. But they began to speak not today nor even yesterday about its urgency. Why did the sectors, pardon me, not comb their hair? Because profound structural changes are, first, completely different priorities in the distribution of capital investments. But now conduct an experiment: find a ministry which is willing to reject a portion of the assets in favor of a neighbor. I assure you, you will not find such simpletons. On the contrary, each sector considers itself all but the center of the universe and with the assistance of the corresponding department of the USSR State Planning Committee—a home-grown lobby—defends its own interests very inventively. While all of them together for many years now have been persistently reproducing the old structure of the economy.

Well, second, profound structural changes are the same latest technologies, which are needed by the sectors like.... In short, the tale about the white bull calf.

Listening to some ministerial advocates, it only remains to be amazed at how the United States, Japan, the FRG, and other developed countries managed to change radically their own structures without sectorial ministries? It is well known, for example, that 150-200 firms created the Japanese miracle. Firms, and not sectors in our understanding.

Should we perhaps muster courage and wisdom and pass final sentence on them? And cut not half of the bureaucrats—but eliminate them completely.

How might the management of scientific research and design work look as a whole? The essence of the proposals of a large group of economists and lawyers is to

establish together with the restored technical departments of the USSR Academy of Sciences a network of integrated scientific and technical centers. Their prototype is interbranch scientific technical complexes and scientific production associations, which have been tightly walled up today within their own sectors. While the sphere of scientific interests of these complexes should correspond one to one to the multisectorial nature of the technologies of tomorrow, which will be developed there. Special-purpose financing and the state order together with other attributes of program management are depriving our science of a longstanding corrupting privilege—irresponsibility.

If the will and intellect of the center should be manifested in full force in anything, this is in the implementation of the strategy of the scientific and technical revolution. Now it is only recorded on paper—in various programs. Who embodies it? Sectorial scientific research institutes, only under the cap of interbranch scientific technical complexes and under the aegis of the State Committee for Science and Technology. But this state committee by and large never received either rights or duties. Even with the appearance of the latest decree of high instances.

"We have been commissioned," Chairman of the State Committee for Science and Technology B. Tolstykh comments on this document in *PRAVDA*, "to make periodically a comprehensive analysis of the scientific and technical level of the sectors of the national economy and to check the conformity of production to the best world achievements, the effectiveness of the use of the scientific and technical potential, and its interaction with academic and VUZ science."

What is this, if not the lot of the supervisor and chief persuader? Well, indeed, is this state committee capable of forcing sectors to salute and correct the noted shortcomings? Were we really not convinced over the decades that administrative steps shoot at "milk"?

The State Committee for Science and Technology with such functions as today is hardly needed. For business it is better to give it finally a real base in the form of scientific technical complexes. And to commission it on behalf of the state to implement the jointly formulated strategy of the scientific and technical revolution, as they have been doing for ages in the same Japan.

Few additional assets will be required for this. The state is capable of taking away from sectors the scientific production associations and scientific research institutes, which are toiling there without genuine work. Reorganized into complexes, they will also see through the implementation of goal programs, which today, in essence, are in abeyance. That is, they will not simply hand over anywhere, the prototype of a revolutionary technology, but will also consult on the construction and modernization of enterprises in accordance with their own designs and developments, will bring them up to the promised efficiency, and will turn them over to a government commission.

While further it is the concern of the government and the USSR State Planning Committee to create such conditions, economic and organizational, under which the latest technologies would immediately be demanded by industry. But this is a special theme.

For the time being I am going through the pages of the report of the State Committee for Science and Technology on the achievements of science and technology. Alas, there is nothing to be particularly proud of.

Suggestions for Reorganizing Failing MNTK's
18140102a Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Dec 88 p 1

[Article by V. Goryachkin, senior expert of the State Committee for Science and Technology: "Interbranch Scientific Technical Complexes Will Never Get Themselves Out of the Quagmire of Half Measures"; first paragraph is *SOTSIALISTICHESKAYA INDUSTRIYA* introduction]

[Text] Three years ago, when the decree on the establishment of interbranch scientific technical complexes [MNTK] was adopted, this combination of letters seemed like a symbol of hopes. According to the concept the institutes, design bureaus, and enterprises of different ministries and departments, which were united by a joint program of actions, should have ensured in the utmost shortest time the development and introduction of the most advanced types of equipment, technology, and materials.

Today it is already clear that the majority of interbranch scientific technical complexes have not come up to expectations. And did not accomplish the anticipated breakthrough. Not by chance in case of the attempts to prove their advantages, as a rule, is the same "range" of complexes mentioned—Institut elektrosvarki imeni Ye.O. Patona, Mikrokhirurgiya glaza, Mekhanobr, and a number of others. But the head organizations of these interbranch scientific technical complexes were also distinguished before unification by a high scientific potential, a quite developed experimental base, and the prestige of the managers. Therefore, it is possible to understand, but impossible to accept the desire to attribute their successes to the new structure.

Why did the interbranch scientific technical complexes "not begin to work"?

One of the reasons is well known: interbranch scientific technical complexes began to be established long before the appearance of the Law on the State Enterprise and, moreover, before the changeover of sectorial science to cost accounting. Therefore, administrative command methods were made the basis for their activity. Radical restructuring, and not cosmetic repair, was required in order to call upon economic levers to replace them. But, perhaps, the main trouble is that interdepartmental barriers remained within the majority of interbranch

scientific technical complexes. The scientific research institutes, design bureaus, and enterprises, which became a part of the complexes, did not simply remain subordinate to "their own" ministries and departments—the latter should also have financed their operations. The promise to supply the complexes with all types of resources on a priority basis remained in the category of good wishes. The following fact also testifies to the attitude toward them: of the 24 facilities of interbranch scientific technical complexes, which should have gone into operation in 1987, only 7 were put into operation. Add to this also the poor interest of enterprises in the duplication of new developments.

Interbranch scientific technical complexes began to slip in this quagmire of half measures already at the start. But their "guardians"—central economic organs—did not wish to notice this. In spite of the understanding that new developments would appear only in 3-5 years, they hastened to report more quickly that the new form of the integration of science and production "had begun to work" and was already yielding impacts of many millions of rubles. Under the press of such moods the head organizations took the path of least resistance: they began to include already finished developments, which were devised during the "stagnation" period, in the unified plans of interbranch scientific technical complexes. Or the jobs, which had already been performed in accordance with sectorial plans or the assignments of scientific and technical programs. Such a practice is being retained to this day. And by no means because the complexes have decided to seek an easy life.

During the establishment of interbranch scientific technical complexes departmental vanities already proved to be stronger: ministries refused to include in the complexes many of their own collectives. As a result the head organizations went to the starting line with far from the partners, on which they had counted. The diluted composition of the complexes also affected the content of their plans.

Unfortunately, these plans were not subjected to careful evaluation. No one attempted also to evaluate: By means of what should the new form of organization ensure a breakthrough of the scientific front? And especially shorten drastically the time of work?

As is known, the USSR State Committee for Science and Technology was at the source of the establishment of interbranch scientific technical complexes. It is financing many operations today as well. But its influence on the life of the complexes, let us say frankly, is small. In their activity not rubles, but actual embodiment—*instruments, materials, equipment, areas*—carries weight. The corresponding ministries should allocate limits for them to the organizations of the complex. But, being interested in the fulfillment of only sectorial assignments, they are in no hurry to do this.

There also did not come immediately the understanding that it is impossible to accomplish the twofold task—to

shorten the time of development of equipment and to attain the level of the best world models—without the serious restructuring of the work of scientific research institutes and design bureaus and without the appearance among them of a real interest in the intensification of their own labor. In short, without what came into sectorial science later, with the appearance of economic methods of management. Hence, too, the results: according to the available data, among the developments of interbranch scientific technical complexes only 22 percent exceed the world level. But our leading institutes, which operate outside the complexes, also have practically the same indicator.

Here a question arises: Are interbranch scientific technical complexes needed at all? And if they are needed, in what capacity? Many specialists believe that the idea of establishing interbranch scientific technical complexes has degenerated into a regular "campaign," which, without having yielded the anticipated results, is gradually losing strength. They have grounds for such predictions: for example, the new statute on complexes, which should create for them the conditions for normal operation, has been under preparation for more than a year. And there is the real danger that after numerous consultations it will appear, just as many similar documents, emasculated to the limit.

The managers of the complexes have their own point of view. It is difficult to raise objections when they assert that for the increase of the efficiency of operations all assets and limits should be distributed through the head organization of the interbranch scientific technical complex. The demand on the development of the pilot base also does not evoke doubts. But several managers are also not adverse to asking for a little more. They, for example, insist on the inclusion of a larger portion of the developments in the state order, which will make their assimilation by industry mandatory. Opinions concerning the transfer of enterprises to complete subordination to the interbranch scientific technical complexes are also being heard.

There is a serious danger in these proposals. As soon as you adopt them, the interbranch scientific technical complexes will turn into kinds of miniministries, which will differ from the existing ones only in the product mix. While the mechanism of their activity will remain the same—with administrative command management, with current plans, and with reliance on the "gross." The longing for this is also appearing today: for example, the Nauchnye pribyrnye Interbranch Scientific Technical Complex earns many of its millions from the output of ordinary products. Everyone also knows the low effectiveness of ministries in matters of the assimilation of new equipment—in our country four- to fivefold more time is usually spent on the updating of a product than abroad. Where are the guarantees that interbranch scientific technical complexes will not inherit these defects?

People may reply to me that it is always easier to criticize. It is more difficult to say: What, all the same, should

interbranch scientific technical complexes be like? How is one to help them to turn into a striking force in the decisive directions of scientific and technical progress? In principle, the answer to these questions is well known: it is necessary first of all to renounce the practice of half measures. And to adopt our and foreign existing experience of the rapid development of work in the priority directions. While it testifies that it is possible to achieve the successful accomplishment of the posed tasks only by means of goal program planning and financing.

It is a question not only of allocating all assets and resources to the head organization of the interbranch scientific technical complex, having permitted it to dispose of them at its own discretion. It is also necessary to learn to calculate accurately what expenditures the achievement of its outlined goal will require, what the composition and structure of the complex should be for this, and even which of the operations it is advisable to carry out through a state order. Given such an approach, the program of operations of the interbranch scientific technical complex will envisage the accomplishment of one or several specific projects. Each of them should encompass all the stages—from research to the organization of production. When formulating these projects, the head organization should have the opportunity to enlist, if this is necessary, other institutes. Finally, the projects should be adopted in the corresponding scientific council of the State Committee for Science and Technology with the participation of representatives of central economic organs and interested ministries.

The approved project should be drawn up as a state order on science and technology. Moreover, the resources for it should be allocated to the interbranch scientific technical complex not for each year, but for the entire time that has been allotted for the solution of the problem. Moreover, if we are certain that the complexes are operating, indeed, in the key directions of scientific and technical progress, we are obliged to supply them with equipment, materials, limits of capital investments, and even foreign currency on a priority basis.

Of course, the head organizations of the complexes, since they are responsible for the end result, should decide themselves with whom they are to deal. While the structure of the interbranch scientific technical complex can be flexible and mobile. Instead of the present 20 or even 40 partners, they can consist of just 2-4 strong institutes. These collectives are called upon to ensure the

preparation of projects, the technical and economic evaluation of the outlined solutions, and the distribution of the assets being allocated. The most different institutes and enterprises can be enlisted by means of economic contracts in the fulfillment of other operations on the project. Not orders and state orders, but economic stimuli are needed in order to interest them in this. For example, for participation in the projects of interbranch scientific technical complexes higher deductions for the material incentive fund should be introduced.

The content of the projects, which are being formulated by interbranch scientific technical complexes, can be most diverse. Take, for example, such a painful problem for oilmen as the corrosion of metals. Due to it in the last half a year as many breaks in the walls of pipelines have occurred as during all of 1986. And about 1 million tons of petroleum were discharged into the environment. Multisectorial cooperation in the broadest sense is required in order to solve the problem of the reliable corrosion protection of petroleum equipment and pipelines. The joint efforts of metallurgists (corrosion-resistant steels and alloys), chemists (corrosion inhibitors, materials for coatings), machine builders (equipment of corrosion-resistant design), electrical engineers (electrochemical protection), and instrument makers (means of monitoring) are needed.

The example, which is connected with the processes of dressing the ores of nonferrous metals, is also just as significant. Today they are carried out with the use of chemical reagents, which as industrial sewage pollute the environment. Meanwhile the Mekhanobr Interbranch Scientific Technical Complex could successfully undertake the elaboration and implementation of designs of ecologically clean works for the processing of ores of nonferrous metals. Clients will always be found for such designs. And the funds of complexes would begin to be replenished by means of the revenues from the industrial implementation of developments.

The restructuring of the activity of the interbranch scientific technical complex will inevitably affect the work of the head organization; the reorientation of several of its laboratories and divisions and the strengthening of the role of the subdivisions, which deal with questions of technical and economic research, will be required. But all this is necessary: in order to bring complexes up to the leading levels, the simple renovation of their "facades" is already insufficient.

Chemical Industry Deputy Minister Calls for More Capital Investment

18140106 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Dec 88 p 4

[Interview with USSR Deputy Minister of the Chemical Industry Viktor Mikhaylovich Torbenko by Ye. Kolesnikova and V. Lagovskiy: "The Comments of USSR Deputy Minister of the Chemical Industry V. Torbenko"; date, place, and occasion not given]

[Text] [Question] Viktor Mikhaylovich, first of all we honestly admit that the materials at the stands surprised us. Instead of the usual explanations to the exhibits, there are frank admissions—one thing does not exist; there is not enough of a second thing; a third thing is entirely impossible. What does the common citizen need this for? The impression is as though the organizers of the exhibition are appealing not to the visitors but to workers of the USSR State Planning Committee.

[V. M. Torbenko] In our times public opinion is acquiring greater and greater weight. So we decided to show the might and generosity of chemistry and to tell about new technologies, materials, and items. And to demonstrate then and there—major capital investments are needed so that all this would appear. Today the chemical industry cannot do without them. While the acceleration of scientific and technical progress as a whole is impossible without it.

[Question] But that is probably how they reason in every department. And where is one to get the assets?

[V. M. Torbenko] Perhaps, it is worth revising the distribution of budget allocations among sectors. For example, as before steel production is being developed intensively. But less expensive polymers in many cases can replace metal parts and components. An airplane, 70 percent of which was made from polymer materials, was displayed at the exhibition. At motor vehicle works a ton of polymers can replace 3-4 tons of metal and, what is more, will make it possible in so doing to reduce the power-output ratio of production. According to the estimate of specialists, modern plastics are capable of saving 100 million tons of ferrous and nonferrous metals and of freeing a tenth of the operating metalworking and wood-working machines and about 2 million workers. As you see, chemistry is performing by no means the role of a petitioner. But, I repeat, a miracle will not happen without investments. In order to meet completely the needs of the national economy by 1995, the amount of capital investments in the chemical industry should come to approximately 40 billion rubles. These assets are needed in order to renovate and modernize outdated enterprises, to build new ones, to furnish them with equipment, and to supply production with raw materials. But this will make it possible to accomplish only the most urgent, priority tasks. One must also look to the future. While this means to lay a solid technical and technological foundation of the sector and to actively

develop chemical machine building. For the present it is not pampering us. In 17 years just for the output of household chemical goods of the 400 ordered units of equipment we have succeeded in obtaining...only 37. The example is indicative, but far from the only one.

An especially complex situation has formed now, when the mechanism of the strictly centrally allocated, centralized distribution of equipment is already slipping, while wholesale trade in means of production has not yet picked up strength. Under these conditions we are keenly aware of the dictation of equipment producers. Our own machine building base is very weak. I am convinced: in order not to find ourselves in the future in the same disastrous situation as now, it is necessary, first, to revise the priorities in the machine building complex in favor of the production of chemical equipment and, second, to establish in our sector our own machine building base. For the present we are investing a portion of the earned foreign currency in the establishment of joint ventures in the system of the USSR Ministry of Chemical and Petroleum Machine Building. Thus, the Soviet-American firm Dresser-Soviet Engineering was recently established.

[Question] The shortage of household chemical goods worries everyone. When will we get rid of it?

[V. M. Torbenko] Before looking into the future, let us analyze the formed situation. As strange as it may be, this year we completely met the orders of trade. Even 5,000 tons of synthetic detergents alone, for example, were produced in excess of the plan.

[Question] Trade probably made a mistake in the orders. But is it really difficult to increase the output?

[V. M. Torbenko] We cannot quickly build new plants and specially reorient the entire sector. I am certain that the wisest thing now is to distribute uniformly the available household chemical products, to transport them on time from plants, and to set up the efficient operation of transportation. And let my words not seem like an excuse to you. For example, in Baku and Central Asia the shortage, about which we are speaking, does not exist, while in Leningrad the irregularities with toothpaste are in their 2d year. The psychological factor has also taken effect. Shoppers, as if at command, rushed to stock up on powdered detergents, shampoos, and soap. We cannot instantaneously fill the gap. But if the stir dies down, I guarantee that the acute shortage will disappear. By 1990 we will completely meet the demand for synthetic detergents and bleaches. But, alas, as before there will not be enough aerosols, spot removers, and perfume additives for creams and shampoos. Why? I believe I already gave the answer at the beginning of our conversation.

[Question] And finally, Viktor Mikhaylovich, a traditional question—about the interrelations of chemistry and ecology.

[V. M. Torbenko] Our ministry was the first to propose the Ecology Comprehensive Program. It is already known which enterprises are polluting the environment, where they are doing so and with what. We also know how to process these waste products. By 2000 the plants of the chemical sector will have completely halted the

discharge of sewage. Considerable assets have been allocated to turn operating enterprises into ecologically clean works. Waste-free technologies have been incorporated in the plan of future works.

Given the present pace of scientific and technical progress only chemistry can become the main protector of nature. For no sector of the national economy is capable of processing harmful substances without the aid of chemical processes. Environmental protection also requires considerable assets, according to estimates, more than 20 billion rubles.

GKVTI Deputy Chairman on Committee's Tasks
18140100 Moscow ARGUMENTY I FAKTY in Russian
No 51, 17-23 Dec 88 p 2

[Interview with Igor Nikolayevich Bukreyev, deputy chairman of the USSR State Committee for Computer Technology and Information Science [GKVTI], by ARGUMENTY I FAKTY correspondent Candidate of Technical Sciences T. Ananyeva under the rubric "20 Million Personal Computers—Such Is Our Need for Them Today": "Barriers in the Way to the Computer Age"; date, place, and occasion not given; first two paragraphs are ARGUMENTY I FAKTY introduction]

[Text] Throughout the world, vast financial assets are being spent on the development of the computer complex. Thus, in Europe last year about \$35 billion were spent; in the United States \$52 billion were spent. This sphere of human knowledge is influencing not only science, economics, and culture; politicians have also been forced to take it into account.

Our correspondent, Candidate of Technical Sciences T. Ananyeva, talks with I. Bukreyev, deputy chairman of the USSR State Committee for Computer Technology and Information Science, about how the process of spreading information technology in our society is taking place.

ARGUMENTY I FAKTY: Igor Nikolayevich, your committee was established a little more than 2 years ago, that is, at the time when the reduction everywhere of the administrative staff began in the country. By what is this to be explained?

I. N. Bukreyev: In every society there are resources of survival, such as energy, raw materials, and so on. All these resources have one common drawback: with time they decrease. So that society would develop, one has either to attract new resources or to replace old resources with more promising ones. The time of a new resource—information, the only product that does not decrease with time, on the contrary, its volume increases with each day—has arrived.

Whereas 10 years ago it was customary to say that the volume of scientific information doubles every 5-7 years, in the 1980's a doubling occurred every 20 months, while by the early 1990's it will occur daily. The more high quality information is introduced in the national economy and the more quickly it is introduced, the higher the standard of living of the people and the economic and political potential of the country are.

In developed countries the "generation" of information has become one of the most profitable and rapidly growing sectors. In the United States information and information technology have developed into the main commodity product. We have fallen substantially behind in this sphere.

The State Committee for Computer Technology and Information Science was also established precisely for the supervision of the accomplishment of the global state task of spreading information technology in our society. Moreover, the committee performs the role of the general client for computer technology.

A very difficult legacy befell us. It is possible to call all the preceding history of the development of computer technology the history of departmental squabbles. Various ministries were engaged in the development of computing facilities. The designing of a computer took departmental paths, and the produced machines proved to be incompatible with each other.

Now for the first time in all times a unified plan of scientific research and experimental design work on computer technology has been formulated. The concept, on the basis of which the State Program of the Spread of Information Technology in Our Society will subsequently be established, will be elaborated by the end of this year. In accordance with the proposed project during each five-year plan the assets, which are invested in the information complex, should at least double.

ARGUMENTY I FAKTY: In what does the concept of a society, in which information technology has been spread, consist?

I. N. Bukreyev: The essence of the problem lies in the maximum acceleration of the dissemination and introduction of new data and knowledge in all spheres of our life. This will become possible only on the basis of the establishment on the broadest scale of accessible and open databases.

That is, first of all one has to establish such bases. In the United States in 1987 there were 3,300 such accessible databases, in England—2,500, and in the FRG—290. Thus far we do not have such bases. There are only departmental bases for a very limited group of specialists.

The second problem is integrated communications networks, which transmit all types of information. Throughout the world cable communications networks are recognized as most promising. In the United States 80 percent of the televisions and all personal computers are hooked up to such a system. For the present we are taking just the first steps in this direction.

And, finally, the third problem is computers. Although in our country the output of computer hardware is doubling annually, there are obviously not enough machines. Moreover, surveys have shown that the available hardware is being used in our country only 30-40 percent of the time. An enormous number of computer centers are operating below all standards, while the productivity of the quite large army of programmers—we have 300,000 of them (for comparison: in the United States there are 700,000 programmers)—is one-eighth to one-sixth as high as that of their American colleagues.

There is one way out of the formed situation—the concentration of the available pool of computers in powerful collective-use centers and the organization of a market of programs, in order to have the opportunity to purchase them, and not to develop them each time all over again.

ARGUMENTY I FAKTY: It is well known that in the United States every other family has a personal computer. But how do things stand in our country with the production of this hardware?

I. N. Bukreyev: We are approximately 10 years behind the leading foreign countries in the area of the development and use of personal computers, while in our daily life people are just beginning to use them.

Given the need in the country—20 million computers—we cannot solve the problem as they solved it in Poland and Hungary, having purchased hardware in the West. In our country the scale is different, and that is why it is necessary to assimilate our own mass production. Plants for the production of personal computers are now being built, for example, in Kishinev—for 450,000 a year. By the end of the five-year plan the overall figure of the production of computers will come to 1.1 million.

ARGUMENTY I FAKTY: Could you not point out the most important directions, in which the spread of information technology would make it possible to obtain appreciable results in the shortest time?

I. N. Bukreyev: This is first of all the sphere of economic information. Under the conditions, when enterprises are obtaining much economic independence, they constantly need rapid reliable data on prices, suppliers, producers, and labor and sales markets.

The computerization of all financial settlements in trade will reduce to a minimum the possibility of various kinds of abuses. The establishment of personal information service centers is an important task.

ARGUMENTY I FAKTY: In speaking about the most important directions of the spread of information technology, it is probably necessary also to touch upon public education, especially the problem of universal computer literacy.

I. N. Bukreyev: There is no and can be no universal computer literacy. It is absurd to teach everyone in school the mysteries of programming, but then it is simply necessary to learn to use a computer and to study school subjects with its assistance.

It is well known that 85 percent of the information enters the human brain through vision. Visual images are most memorable, they are imprinted in the brain for life. The task of using the computer in the educational process also consists precisely in the optimization of the process of the visual perception of an enormous amount of information.

In our schools computers are being used at only 0.1 percent of their potential, since school children work with a computer at best in the one lesson "The Fundamentals of Information Science," but it is necessary to work with it in all lessons, where the acquisition of knowledge in large amounts and at high speeds is required.

ARGUMENTY I FAKTY: How are things going in our country with the training of personnel in information science?

I. N. Bukreyev: It is possible not to be a specialist in computer technology and programming, but, by taking advantage of what is called the "friendliness" of advanced electronic systems, it is quite easy to interact with the computer and to solve one's own professional problems on it.

Special centers for instruction and the improvement of skills in this area are being established for those who have graduated from higher educational institutions. In a year more than 30,000 specialists in 480 specialties have undergone advanced training in the system of centers of the State Committee for Computer Technology and Information Science.

Draft of Law on Patents, Inventions
18140109 Moscow *PRAVDA* in Russian
27 Dec 88 pp 1, 2, 3

[Decree of the Presidium of the USSR Supreme Soviet of 23 December 1988 "On the Draft of the USSR Law on Inventive Activity in the USSR" and text of the draft of "The Law of the Union of Soviet Socialist Republics on Inventive Activity in the USSR"]

[Text] Decree of the Presidium of the USSR Supreme Soviet "On the Draft of the USSR Law on Inventive Activity in the USSR"

The Presidium of the USSR Supreme Soviet resolves:

1. To publish the draft of the USSR Law on Inventive Activity in the USSR, which has been submitted to the USSR Supreme Soviet by the USSR Council of Ministers, in the newspapers *IZVESTIYA SOVETOV NARODNYKH DEPUTATOV SSSR*, *PRAVDA*, *SOT-SIALISTICHESKAYA INDUSTRIYA*, *TRUD*, and *EKONOMICHESKAYA GAZETA* and in republic newspapers for national discussion.
2. To commission the USSR Council of Ministers to consider the proposals and remarks on the draft of the USSR Law on Inventive Activity in the USSR, which were received during the national discussion, to make in the draft the necessary corrections and additions, and by 15 March 1989 to submit it to the Presidium of the USSR Supreme Soviet.

To deem it expedient to submit the completed draft of the USSR Law for the conclusion of the standing commissions of the Council of the Union and the Council of Nationalities.

[Signed] Chairman of the Presidium of the USSR Supreme Soviet M. Gorbachev

Secretary of the Presidium of the USSR Supreme Soviet T. Menashashvili

Moscow, the Kremlin. 23 December 1988

Draft: The Law of the Union of Soviet Socialist Republics on Inventive Activity in the USSR

This Law in conformity with the USSR Constitution specifies the economic, organizational, and legal conditions of inventive activity in the USSR and ensures its orientation toward the development of equipment and technology, which are fundamentally new and are competitive on the world market.

Invention activity serves as a source of the most advanced technical solutions, which revolutionize social production and raise it to a higher scientific and technical level, and is one of the main motive forces of economic and social progress, which leads to the steady

increase of the well-being of the Soviet people, the strengthening of the defensive capability of the country, and the increase of its economic independence.

The political and economic systems of the USSR guarantee USSR citizens the freedom of creative scientific and technical work and create the conditions for the harmonious combination of the interests of inventors, labor collectives, and society and the strict observance of the principle of social justice in the area of invention.

The Law is aimed at the increase of the economic interest of enterprises (associations), institutions, organizations, and their labor collectives in the development and use of inventions and envisages steps of the moral and material stimulation of the participants in creative scientific and technical work.

The Law develops the democratic principles in the relations between the participants in inventive activity and guarantees the observance of their rights and creative and economic interests.

I. Inventive Activity in the USSR

Article I. The Role of Inventive Activity in the Development of the Socialist Economy

1. Under the conditions of the scientific and technical revolution, the development of commodity-money relations, the extensive use of economic methods of the management of the national economy, and the functioning of state and cooperation enterprises on the principles of full cost accounting and self-financing, invention is becoming one of the most important factors of the increase of the efficiency of the socialist economy.

2. Invention holds a leading position in the sphere of creative scientific and technical work, ensures the extensive use of the achievements of science in production and the improvement of equipment and technology, and is an efficient form of the inclusion of the labor of scientists, engineering and technical personnel, and production innovators in the accomplishment of the priority tasks of the acceleration of the socioeconomic development of Soviet society.

3. The state aids in every possible way the development of invention. The creative activity of inventors is honorable, their contribution to social production enjoys universal recognition.

4. The state on the basis of the democratization of social relations implements goal-oriented steps on the stimulation of inventive activity and promotes the display and comprehensive use of the creative potentials of inventors in the development of the productive forces of socialist society, in the modernization of the structure and the improvement of the organization of production, in the increase of labor productivity in the national economy, and in the assurance of high consumer properties of the

goods, works, and services, which are made available to the population, and the competitive ability of Soviet equipment and technology on the world market.

Article 2. The Enterprise Is the Basic Unit in the Organization of Inventive Activity

1. The state, cooperative, and other enterprise, institution, and organization (hereinafter called "the enterprise") create the necessary conditions for the development of creative inventive work and the use of inventions in production. The enterprise involves the members of the labor collective in inventive activity, carries out under the conditions of socialist competition the search for highly effective technical solutions and the sharing of the experience of inventive activity, and performs patent and license work.

2. Inventors directly or through their public organizations participate in the settlement of all questions, which are connected with the organization and carrying out of inventive activity at the enterprise. They should be represented in the council of the labor collective of the enterprise and in the scientific and technical or technical and economic council.

3. The administration of the enterprise in consultation with the trade union committee can establish for the inventor an individual work routine for the development of an invention and its preparation for use in production.

The indicated routine finds expression in a special work schedule, the granting of creative leave, and the supply of the necessary equipment, tools, materials, and information.

The enterprise has the right to introduce for inventors special positions for the period of work on an invention with their release from the basic job and with the remuneration of labor in an amount that is not less than the average wage which they received earlier.

In case of the reduction of the number of personnel of the enterprise the authors of inventions, which have been used at this enterprise, have the preference to be kept on the job.

4. The administration uses effective methods of the organization of inventive activity, particularly by the formulation of technical solutions on a competitive basis and the establishment for these purposes of temporary collectives.

5. The administration and the labor collective of the enterprise are obliged to observe strictly the rights and legal interests of inventors.

6. For the increase of the efficiency of the work, which is connected with inventive activity, the administration of the enterprise gives the utmost assistance to the patent subdivisions and the public organizations of inventors.

Article 3. The Role of Organs of State Management in the Development of Inventive Activity

1. The USSR State Committee for Science and Technology is the statewide organ which is in charge of the work on the development of inventive activity in the country.

The USSR State Committee for Science and Technology ensures the utmost development of the creative scientific and technical work of the working people and the monitoring of the large-scale use in production of inventions which are of great national economic importance.

The State Committee for Inventions and Discoveries attached to the USSR State Committee for Science and Technology (Goskomizobretaniy) carries out the examination of the applications for inventions, the issuing of patents, and their registration, gives procedural assistance to the patent services of ministries, departments, and enterprises, ensures the training of patent experts, and performs patent information work.

2. The USSR State Planning Committee and other central economic organs when formulating the plans of the economic and social development of the country envisage organizational and economic measures, which are aimed at the creation of the conditions for the development of inventive activity and the implementation of its results in the national economy, and ensure on the basis of state orders for the development of new equipment and technology the extensive use in the national economy of important inventions of an intersectorial nature.

3. USSR ministries and departments and the Councils of Ministers of the union republics when formulating and implementing technical policy, by actively using economic levers and stimuli, aim inventive activity in the sectors and national economy of the republics at the solution of important priority problems and at the development of fundamentally new types of products and technology; establish in necessary cases special scientific and technical, introducing, and production enterprises and temporary collectives for the development and assimilation on the basis of the most promising inventions of new industrial production, as well as make available to subordinate enterprises the necessary financial, material, and technical resources from centralized funds.

Article 4. The Functions of the Soviets of People's Deputies in the Area of Invention

1. The Soviets of People's Deputies within their powers aid the development at the enterprises, which are located in the corresponding region, of inventive activity on the accomplishment of the most important tasks of the

improvement of the production and social infrastructure, environmental protection, the output of high quality consumer goods, and the provision of services to the population.

2. The Soviets of People's Deputies create the conditions for the extensive development of invention, promote the independent creative technical work of the population by making available the necessary premises, physical assets and equipment, information supply, and other services, and organize the dissemination of advanced experience of inventive activity in the country.

3. The Soviets of People's Deputies perform mass organizational work, which is aimed at the technical improvement of production on the basis of inventions, examine the results of the use of inventions in the national economy of the region, take effective steps on the increase of the prestige of the creative work of inventors and their social status in society, and enlist inventors in the active work of the permanent deputy commissions and other organs of the Soviet, which are in charge of industry, construction, transportation, agriculture, and consumer service.

4. The Soviets of People's Deputies carry out the monitoring of the observance of the legislation on inventive activity in the region and given assistance to inventors in the realization of their rights and legal interests.

Article 3. Public Organizations and Invention

1. The work on the development of mass invention is carried out with the extensive participation of trade union, Komsomol, and other public organizations in conformity with their charters (statutes).

2. The public organizations of inventors, the engineering and scientific and technical societies of the USSR, as well as other public organizations, which are connected with the development of inventive activity in the USSR, give inventors organizational, material, and other support, carry out the sharing of experience and the promotion of the achievements in inventive activity, give assistance to the state in the protection of the rights and legal interests of inventors, and can establish cost accounting introducing enterprises, organizations, and groups and temporary creative collectives.

II. The Invention and Its Legal Protection

Article 6. The Concept of an Invention

1. The technical solution of a problem, which has novelty, an unobvious nature, and production applicability, is recognized as an invention.

2. A technical solution has novelty, if its essence on the date of priority of the application is not known from previous level of equipment and technology.

3. A technical solution is unobvious, if its essence does not follow in an apparent manner from the level of equipment, which is known for the specialist in this area.

4. A technical solution has production applicability, if it can be used in the national economy of the country at the moment of its development or in the future.

5. A device, a method (including microbiological, as well as methods of treatment, diagnosis, and prevention), a substance (including chemical and medicinal), a strain of a microorganism, as well as the use of a previously known device, method, substance, and strain of a microorganism for a new purpose can be the objects of inventions.

6. There are not recognized as inventions:

- scientific theories;
- methods of the organization and management of the economy;
- symbols, schedules, and rules;
- diagrams, rules, and methods of the performance of mental operations;
- algorithms and programs for computers;
- designs and diagrams of the layout of structures, buildings, and territories;
- proposals, which concern only the appearance of items and are aimed at the meeting of esthetic needs;
- other solutions, which do not meet the requirements stipulated by paragraph 1 of this article.

7. Inventions, which pertain to the defensive capability of the USSR, are considered secret. In accordance with established procedure other inventions can be recognized as secret, if they affect special state interests of the country.

Article 7. Authorship to an Invention

1. The right of authorship to an invention belongs to the citizen who developed the invention.

2. If several citizens jointly participated in the development of an invention, they are all considered the coauthors of such an invention.

3. Citizens, who did not make their own direct creative contribution to the development of an invention and who gave the author only technical, consultative, organizational, or material assistance or contributed to the official registration of the rights to an invention and to the use of the invention in production, are not recognized as coauthors.

4. The procedure of exercising the rights, which belong to the coauthors of an invention jointly, is specified by their agreement. Organs of state power and management, enterprises, organizations, and officials cannot interfere in the execution of the rights by the coauthors of an invention.

5. The right of authorship to an invention is a permanent and inalienable personal right.

Article 8. The Legal Protection of an Invention

1. The right to an invention is protected by the state and is certified by a patent.

2. The patent for an invention certifies the recognition of the claimed technical solution as an invention, the authorship to the invention, the priority of the invention, and the exclusive right to the use of the invention.

3. The patent for an invention is valid for 20 years, counting from the date of receipt of the properly drawn up application by the State Committee for Inventions and Discoveries.

4. The legal protection, which is granted by the patent, applies only to what is stipulated by the formula of the invention. The description and drawings serve only the purpose of interpreting the formula of the invention.

5. The force of a patent, which has been issued for a method of obtaining a product, also applies to the product which is directly produced by this method.

Here the product is considered to have been obtained by the patented method in the absence of evidence to the contrary.

6. Legal protection as inventions is not granted to solutions, which are at variance with public interests, the principles of humaneness, and socialist morality.

7. The legal protection of new strains of plants and breeds of animals, which have been obtained primarily by a biological method, is accomplished by special legislation.

Article 9. The Exclusive Right to the Use of an Invention

1. The exclusive right to the use of an invention belongs to the patent owner.

2. The exclusive right to the use of an invention grants the patent owner the right to use the invention at his own discretion, as well as the right to prohibit the use of the invention in cases which are at variance with this Law.

Article 10. Actions Which Are Not Recognizable as a Violation of the Exclusive Right to the Use of an Invention

There is not recognized as a violation of the exclusive right to the use of an invention:

— the use of means, which contain inventions that are protected by patents, on board marine or river vessels of other countries, in the hull of a vessel, in

machines, rigging, mechanisms, and other equipment, when these vessels are temporarily or accidentally in USSR waters, on the condition that the indicated means are used exclusively for the needs of the vessel;

— the use of means, which contain inventions that are protected by patents, in the design or during the operation of air, space, and ground means of transportation of other countries or auxiliary equipment for these means, when the indicated means of transportation are temporarily or accidentally on USSR territory.

The indicated actions are not recognized as a violation of the exclusive right to the use of an invention, if the marine or river vessels, the air, space, or ground means of transportation belong to natural or juridical persons of countries which grant the same rights to USSR citizens and Soviet juridical persons.

Article 11. The Right of Prior Use

Any person, who before the date of priority of an invention, which is protected by a patent, and independently of its owner used a solution, which is identical to the invention, or made preparations necessary for this, retains the right to its subsequent free use.

Article 12. The Patent Owner

1. The patent for an invention is issued to:

- the author of the invention;
- the natural or juridical person (on the condition of his consent), who will be indicated by the author of the invention as the patent owner in the application for the obtaining of the patent or in the declaration, which has been submitted to the State Committee for Inventions and Discoveries at any time before the entry of the invention in the USSR State Register of Inventions;
- the legal successor of the author of the invention in conformity with the legislation on inheritance;
- the USSR State Patent Fund, if the exclusive right to the use of the invention is transferred in accordance with established procedure by the author or the patent owner to the state.

2. The patent for an invention is issued jointly to the author and the enterprise (public organization), if the invention was developed by the author during the period of his work at the enterprise (public organization) and the activity of the author in conformity with the assignment issued to him was aimed, as follows from the

documentation of the enterprise (public organization), at the solution of precisely the technical problem, the elaboration of which concluded with the development of the invention.

3. The patent for an invention is issued to the enterprise (public organization), if the appropriate contract has been concluded between the author and the enterprise (public organization).

The contract along with the cession of the right to the obtaining of a patent specifies the duties of the enterprise (public organization) on the creation of the conditions of a material, production, and social nature, which are necessary for the effective creative activity of the author, and on the payment of a reward for the use of development inventions.

Article 13. The Application for the Issuing of a Patent for an Invention

1. The application for the issuing of a patent for an invention (hereinafter called "the application for an invention") is submitted to the State Committee for Patents and Inventions by:

- the author of the invention;
- the enterprise (public organization) and the author of the invention jointly if the conditions stipulated by paragraph 2 of Article 12 of this Law are present;
- the enterprise (public organization) if the conditions stipulated by paragraph 3 of Article 12 of this Law are present;
- the natural or juridical person, to whom the author, the enterprise (public organization), or the author and the enterprise (public organization) jointly will transfer in accordance with established procedure their right to the submission of an application.

2. If the conditions stipulated by paragraph 2 of Article 12 of this Law are present, the administration of the enterprise (public organization) within 3 months from the date of its notification by the author about the invention developed by him does not submit the application for an invention, the author has the right to submit the application independently, without the indication in it of the enterprise (public organization) as the patent owner. The enterprise (public organization) loses in this case the right of the patent owner.

3. The enterprise (public organization), if the conditions stipulated by paragraph 2 of Article 12 are present, has the right to submit an application for the receipt of a patent in its own name, if within 3 months from the date of the appearance of the developed invention the author, having been notified of this, renounces the right to the

ownership of the patent or else does not take the actions, which are necessary for the drawing up of the application for the receipt of a patent jointly with the enterprise (public organization).

4. Foreign citizens and persons without citizenship, who live outside the USSR, or foreign organizations, which have a permanent location in foreign countries, or their patent agents conduct in the USSR business on the receipt of patents for inventions and their keeping in force through the USSR Chamber of Commerce and Industry and other Soviet patent agents.

5. The application for an invention should pertain to one invention or to a group of inventions, which are so interconnected that they form a single inventive idea.

6. The application for an invention should include:

- a request for the issuing of a patent;
- a description and the formula of the invention;
- drawings and other explanatory materials, if they are necessary;
- an abstract.

7. In case of the submission of an application for a secret invention the author and the enterprise (public organization) are obliged to take the necessary steps so that its content would not be divulged.

Article 14. The Transfer of the Right to Submit an Application for an Invention, the Cession of a Patent and the Rights, Which Follow From the Patent

The right to submit an application for an invention, a patent, and the property rights, which follow from the patent, can be transferred by the author, the enterprise, or the public organization to any citizen or juridical persons.

Article 15. The Priority of an Invention

1. The priority of an invention is established in accordance with the date of receipt of the properly drawn up application for an invention by the State Committee for Inventions and Discoveries.

2. If the dates of receipt of the applications coincide, all the authors mentioned in them are regarded as the joint authors.

3. The priority of an invention can be established according to the day of the submission of the application for the invention in foreign countries (convention priority), if the application for the invention was received by the State Committee for Inventions and Discoveries no later than 12 months from the date of the submission of the first application in the foreign country which is a party to the Paris Convention on the Protection of Industrial Property. The applicant, who wishes to avail himself of convention priority, is obliged to indicate this in the

application for the invention and no later than 3 months from the day of its submission to present to the State Committee for Inventions and Discoveries the necessary documents which confirm the legitimacy of such a demand.

Article 16. Exemptions With Regard to the Novelty of an Invention

There are not recognized as circumstances which discredit the novelty of an invention:

- the open display of an invention at exhibits, which are located at official and officially recognized internal exhibitions which have been organized on the territory of one of the countries which are parties to the Paris Convention on the Protection of Industrial Property, if the application for the invention is submitted in a 6-month period from the day of the placement of the exhibit at the exhibition;
- the revelation of the essence of the invention to third parties, as well as the use of the invention, if the application for it is submitted no later than 12 months from the day of the commission of these actions.

Article 17. The Publication of the Application for an Invention

Information on the application for an invention, including a brief description and the formula of the invention, is published by the State Committee for Inventions and Discoveries in an official bulletin 18 months after the date of the submission of the application for the invention. After the publication of the indicated information any person has the right to familiarize himself with the materials of the application for the invention.

Article 18. The Examination of the Application for an Invention

1. The examination of the application for a patent is made by the State Committee for Inventions and Discoveries in cooperation with the applicant by the making of a preliminary examination and a patent examination.

The examination of the application for a secret invention is carried out in accordance with the procedure specified by the USSR Council of Ministers.

2. The applicant and the author of the invention can personally participate in the preliminary examination and the patent examination.

3. The state patent expert, which carries out the examination of the application for an invention, bears responsibility, which is established by legislation, for the demanding and obtaining of additional materials for the application for an invention, which are not required

when making the examination, for the validity of the proposed decision, for the observance of the deadline of the consideration of the application, as well as for the divulgence of its content.

4. During the period of the making of the examination of the application for an invention the applicant has the right on his own initiative to supplement and correct the materials of the application within the stated formula of the invention.

If the additional materials change the essence of the claimed technical solution, they are not accepted for consideration and can be drawn up by the applicant as an independent application with the establishment of priority in accordance with the date of their receipt by the State Committee for Inventions and Discoveries.

5. The making of the preliminary examination and the patent examination is not halted, if a dispute on the authorship to the claimed technical solution is being considered in a court. The decision on the issuing of a patent for an invention, with respect to which a dispute on authorship has been instituted, is made only after the decision of the court, which specifies the author of the invention, has come into legal force.

Article 19. The Preliminary Examination of the Application for an Invention

1. The preliminary examination of the application for an invention is made within a month from the day of its receipt by the State Committee for Inventions and Discoveries. The observance of the formal demands, which are made on the application, is verified during the making of the examination.

2. The applicant, if necessary, can be ordered to make refinements in the application within 2 months after the receipt by him of the request of the state patent expert. In this case the period for the making of the examination is accordingly extended.

If the applicant has violated the set deadline or has ignored the indicated request, the application for an invention is considered rejected as is not published.

3. In case of a positive result of the preliminary examination the applicant after publication of the information on the application is granted temporary legal protection of the claimed invention for a term of not more than 4 years from the date of receipt of the properly drawn up application by the State Committee for Inventions and Discoveries.

Article 20. The Patent Examination of the Application for an Invention

1. The patent examination of the application for an invention is made on the demand of the applicant, the author, or a third party after publication of the information on the application for an invention and should begin no later than the expiration date of the effect of temporary legal protection.

The patent examination can be started on the demand of the author or the application and prior to the publication of the application.

2. During the examination the condition of patentability of the invention are verified.

The level of technology as applied to the claimed invention is determined on the date of its priority in accordance with all types of published information or information reported by another official means to third parties in the USSR and foreign countries, which reveals the essence of the invention which is contained in the application.

3. The state patent expert has the right on his own initiative to request from the applicant additional materials which specify the essence of the invention, if the consideration of the application is impossible without them.

The additional materials, which specify the essence of the invention, should be submitted by the applicant within a 2-month period from the date of receipt of the application.

If the applicant has violated the indicated deadline or has ignored the request, the application for an invention is considered rejected.

4. The examination should be completed no later than 12 months from the date of the making by the applicant of an application for its conducting. The time of the making of an examination for the most complex applications for an invention can be extended by a decision of the Higher Appellate Council of Patent Examination attached to the USSR State Committee for Science and Technology, but by no more than a year.

5. In accordance with the results of the examination the State Committee for Inventions and Discoveries makes a decision on the issuing of or the refusal to issue a patent.

6. The applicant and the author of the invention have the right to familiarize themselves with the materials that are used when making the examination.

Article 21. The Appealing of the Decision on the Application for an Invention

1. In case of disagreement with the decision on the refusal to issue a patent or with the formula of the invention, which is indicated in the decision on the issuing of a patent, the applicant (author) has the right

within a 3-month period from the day of receipt of the decision or the copies requested by him of the materials, which were opposed to the application, to submit to the Higher Appellate Council of Patent Examination attached to the USSR State Committee for Science and Technology a justified objection. The objection should be considered within a 3-month period from the day of its receipt. The applicant (author) has the right to participate in the consideration of his complaint.

2. The decision of the Higher Appellate Council of Patent Examination attached to the USSR State Committee for Science and Technology can be appealed by the applicant (author) of the invention to the USSR Patent Court within 1 year from the day of its making.

Article 22. The Publication of Information on the Issuing of a Patent

The official publication of information on the issuing of a patent is carried out by the State Committee for Inventions and Discoveries within a 3-month period from the date of the making of the decision. The author of the invention, the patent owner, the name and formula of the invention, and other necessary information, which is determined by the State Committee for Inventions and Discoveries, is indicated in the published information on the issuing of a patent.

Article 23. The Protest Against the Decision on the Issuing of a Patent

Any natural or juridical person within 3 months from the date of the official publication of information on the issuing of a patent has the right to protest it to the Higher Appellate Council of Patent Examination attached to the USSR State Committee for Science and Technology.

The protest should be considered within 3 months from the date of its receipt. The person, who sent the protest, and the applicant (author) of the invention can personally participate in the consideration of the protest.

Article 24. The Issuing of a Patent

1. In the absence of protests against the decision on the issuing of a patent in the time, which is set by Article 23 of this Law, the State Committee for Inventions and Discoveries enters the invention in the USSR State Register of Inventions and carries out the issuing of a patent.

2. In case of the receipt by the Higher Appellate Council of Patent Examination attached to the USSR State Committee for Science and Technology of a protest against the decision on the issuing of a patent the entry of the invention in the USSR State Register of Inventions and the issuing of a patent are carried out after the consideration of the protest.

Article 25. The Recognition of a Patent as Completely or Partially Invalid

The patent for an invention over the entire term of its effect can be disputed and recognized as completely or partially invalid in cases of:

- the illegitimate issuing of the patent as a result of the violation of the requirements which are established by this Law for the recognition of a claimed technical solution as an invention;
- the improper indication in the patent of the author (joint authors) of the invention or the patent owner.

Article 26. Duties

1. Duties are levied for the acceptance of an application for the receipt of a patent for consideration, for the making of an examination, for the issuing of a patent, for its keeping in force, as well as for the taking of other legally significant actions which are connected with the patent.

2. The duties are paid by the applicant, the patent owner, as well as any natural or juridical person, who is interested in taking the actions which are stipulated by paragraph 1 of this article.

3. The list of actions, for the taking of which duties are levied, the amounts of the duties, and the preferences on duties are established by the USSR Council of Ministers.

4. By agreement with the author of the invention enterprises (public organizations) and citizens can pay the duties in full or in part.

5. In instances, when the patent has been issued in the name of the USSR State Patent Fund, duties are not paid for its issuing and keeping in force, as well as for the taking subsequently of other legally significant actions. The expenses, which have been incurred by the author of the invention in connection with the payment of duties for the taking of legal actions prior to the issuing of the patent, are reimbursed to him by the USSR State Patent Fund.

Article 27. The Early Termination of a Patent

A patent is terminated ahead of time:

- on the basis of the statement of the patent owner, which has been submitted to the State Committee for Inventions and Discoveries;
- in case of the nonpayment on the set date of the annual duty for keeping the patent in force. In this case the patent can be transferred without compensation in accordance with established procedure to the USSR State Patent Fund at its request;
- in case of the recognition of the patent as invalid.

Article 28. The Patenting of an Invention in Foreign Countries

1. A USSR citizen, a Soviet enterprise (public organization), and the USSR State Patent Fund have the right to patent an invention in foreign countries, with the exception of instances when such an action may do harm to the interests of the security of the state.

2. The applicant bears the expenses which are connected with the patenting of an invention in foreign countries. Credit in transferable rubles or foreign currency can be issued by the USSR Foreign Economic Bank to the applicant for their payment.

III. The Economic Mechanism of the Use of Inventions in the National Economy

Article 29. The Economic Bases of the Use of Inventions

The economic bases of the use of inventions in the national economy are:

- the recognition of the patent for an invention and the property rights, which follow from it, as a commodity;
- the extension of cost accounting relations to the participants in the use of an invention;
- the use of economic levers and stimuli for the purpose of increasing the mutual interest of inventors, enterprises, and society in the extensive use of inventions in the national economy of the country.

Article 30. The Use of an Invention

1. The production, use, importation, offering for sale, sale, and any introduction in economic circulation of a product, which has been produced on the basis of a patented invention, as well as the use of a method, which is protected by a patent, are recognized as the use of an invention.

2. No one can use an invention, for which a patent has been issued, without the consent of the patent owner.

The patent owner should exercise the rights, which are granted by the patent, without detriment to the interests of the state and society.

If an invention is secret, the rights of the patent owner to its use can in accordance with established procedure be restricted within the limits that are necessary for the assurance of the conditions of secrecy.

3. The interrelations with regard to the use of an invention, the patent for which in conformity with Articles 7 and 12 of this Law belongs to several persons, including

on the distribution of the reward or profit (revenue), are governed by the agreement between them. In the absence of an agreement each one has the right to use the invention at his own discretion, except for the granting of a full or exclusive license, as well as the cession of the patent.

4. The use of an invention, the patent for which has been issued in the name of the USSR Patent Fund, is carried out by USSR citizens and Soviet enterprises (public organizations) without special permission.

5. The transfer to foreign natural or juridical persons of the right to use an invention, the patent for which was obtained in the USSR and belongs to a USSR citizen, a Soviet enterprise (public organization), or the USSR State Patent Fund, is carried out in accordance with the procedure specified by the USSR Council of Ministers.

Article 31. The License Agreement

1. In accordance with the license agreement the patent owner (the licensor) binds himself to transfer the right to use an invention in the form of a full, exclusive, or simple license to another person (the licensee), while the other person (the licensee) assumes the obligation to use this invention and to make to the licensor the payments which are stipulated by the agreement. The fund for the development of production, science, and technology or another fund of similar purpose serves as the source of the indicated payments, if a state enterprise acts as the licensee.

The obligation of the licensor on the performance of work and the rendering of services, which are connected with the use of the invention by the licensee, including "know-how," can be stipulated by the license agreement.

In case of the use of an invention in a plan for the performance of construction, installation, start-up and adjustment, and other operations the organization, which derives an economic impact from the use of the invention, is the licensee. The invention is included in the plan in consultation with the licensee.

If the invention is used in a scientific and technical product, which is manufactured by the organization that is the patent owner, in accordance with the agreement with the client the right to use the invention is transferred on a license basis.

2. In case of a full license all the property rights, which follow from the patent, for the term of validity of the agreement pass to the licensee; in case of an exclusive license the exclusive right to use the invention within the limits, which are stipulated by the agreement, with the retention by the licensor of the right to use the invention in the area, which is not transferable to the licensee,

passes to the licensee; in case of a simple license the right to use the invention in his own production within the limits, which are stipulated by the agreement, passes to the licensee.

Article 32. The Open License

The patent owner can submit to the State Committee for Inventions and Discoveries for official publication a statement on the granting to any person of the right to use the invention (an open license). In this case the duty for keeping the patent in force is reduced by 50 percent as of the day of publication of such a statement.

The person, who has expressed the wish to use the indicated invention, is obliged to conclude with the patent owner an agreement on payments.

Article 33. Mandatory and Compulsory Licenses. The Compulsory Purchase of a Patent

1. In case of the refusal of the patent owner or the owner of a full or exclusive license to conclude an agreement on the granting of a simple license for the use of an invention to an enterprise, which needs it for the filling of a state order, the USSR State Committee for Science and Technology can make a decision on the granting to the indicated enterprise of a mandatory license with the establishment of the limits of the use of the invention and the amount, time, and procedure of payments.

2. If the use of an invention on the territory of the USSR is not properly carried out within 4 years from the day of the submitting of the application for the invention or within 3 years from the day of the issuing of the patent, upon the expiration of the longer of these terms a person, who wishes to use the invention, if it is impossible to conclude a license agreement with the patent owner, can petition the court to grant him a compulsory license with the indication of the limits of the use of the invention and the amount, time, and procedure of payments.

3. When an invention is of especially great importance for the state, but it is not possible to reach an agreement with the patent owner on the cession of the patent or the issuing of a license, by decision of the USSR Council of Ministers the patent for the invention can be purchased in a compulsory manner with the one-time payment of monetary compensation to the patent owner.

Article 34. The License for the Use of a Dependent Invention

If the patent owner cannot use an invention in connection with the fact that another invention, which has been patented by another person, is used in it, he has the right to demand of the latter the granting of a simple license for this invention.

Article 35. The Liability as to Property for the Infringement of a Patent

1. A person, who uses a patented invention in contradiction with this Law, is considered an infringer of the patent.

2. At the demand of the patent owner the infringement of the patent should be ceased with his compensation for the losses and the confiscation for his benefit of the profit (revenue), which was derived as a result of the illegal use of the invention.

If the patent was issued in the name of the author and an enterprise, the assets, which have been derived by way of compensation for the illegal use of the invention, are distributed between in the patent owners in accordance with an agreement between them.

A fine in the amount of 10 percent of the profit (the corresponding portion of the revenue), which was derived from the sale of a product which was manufactured with the use of the invention, is also collected from the infringer of the patent for the benefit of the USSR State Patent Fund.

Demands on the infringer of a patent can also be made by the owner of a full or exclusive license, if the patent owner within a 2-month period from the day of the establishment of the fact of the infringement of the patent has not taken proper steps against its infringer.

Article 36. The Use of a Technical Solution During the Period of Effect of Its Temporary Legal Protection

1. During the period of effect of temporary legal protection the applicant has the right to use the developed technical solution.

2. Natural and juridical persons, who use the technical solution, pay the patent owner monetary compensation after the obtaining of a patent for the invention. The amount of compensation is specified by an agreement of the parties.

Article 37. The Centralized Selection of Inventions

The USSR State Committee for Science and Technology annually identifies with the participation of the corresponding ministries and departments the inventions that are of great national economic importance.

The objects of new equipment and technology, in which during the corresponding planning period the selected inventions should be implemented, on the suggestion of the USSR State Committee for Science and Technology in accordance with established procedure are included in state orders.

Article 38. The Determination of the Share of the Economic Impact From the Use of an Invention

The enterprise, which produced equipment (a product) or used a technology (method), which contain an invention, with the participation of the consumer and the author (at his request) determines in its price the share of the economic impact which is obtained due to the use of this invention. This share is taken into account when making calculations of the profit (revenue) of the enterprise, which is derived from the use of the invention, when determining the amount of the reward to the authors and the bonuses to the people, who contributed to the development and use of the invention, as well as when establishing privileges with respect to taxation.

Article 39. The State Stimulation of the Use of an Invention

1. The profit (revenue) and the currency receipts, which are derived by the enterprise, which is the patent owner, from the use of the invention in its own production, is not liable to deduction for the state budget and to a superior organ for 3 years from the date of entry of the invention in the USSR State Registry of Inventions.

2. The profit (revenue) and the currency receipts, which are derived by the enterprise from the use of an invention as a result of the purchase of a license, are not liable to deduction for the state budget and to a superior organ for 3 years from the day of the conclusion of the agreement on the acquisition of the license.

3. By decision of the USSR Council of Ministers the terms, which are indicated in paragraphs 1 and 2 of this article, can be extended with respect to inventions, which are of great national economic important and require a longer time for their assimilation in production.

4. The assets, which are left at the disposal of enterprises due to the privileges with regard to deductions for the state budget and to a superior organ, which are indicated in paragraphs 1 and 2 of this article, are spent by them for the increase of the technical level of production, the social development of the enterprises, and the stimulation of inventive activity.

The indicated assets, minus the reward to the author of the invention and the bonus to the people, who contributed to its development and use, as well as the deductions for the USSR State Patent Fund, are channeled into the fund for the development of production, science, and technology, the social development fund, or other funds of a similar purpose in conformity with the economic standards of their formation.

5. Deductions for the state budget and to a superior organ are not made from the profit (revenue) and the currency receipts of the enterprise or new works, which

are specially established for the production of new equipment on the basis of a patented invention, in the portion, which was derived from the use of this invention, for 3 years from the day of the placement of the enterprise or new works into operation.

The assets, which are allocated for the establishment of such an enterprise or new works, are paid in by interested enterprises from the profit (revenue) before its distribution, while the income of USSR citizens, which is allocated for these purposes, is exempt from taxation.

6. The saving, which has been derived by a budget-carried organization from the use of inventions, as well as the revenues on license agreements for 3 years from the date of the entry of the invention in the USSR Register of Inventions or the conclusion of an agreement on the acquisition by it of a license are left entirely at the disposal of the budget-carried organization and are allocated for the development and stimulation of inventive activity.

7. Enterprises, which use inventions or carry out the preparation of production for their use, have the right to obtain bank credit on preferential terms.

Article 40. The Distribution of the Revenue of the State Enterprise From the Sale of a License

The revenue of the state enterprise from the sale of a license minus the reward to the author and the bonuses to the people, who contribute to their sale, as well as the deductions for the USSR State Patent Fund is credited to the profit (revenue) of the enterprise after the making of payments for resources and then is channeled into the state budget, is allocated to the superior organ, and is distributed among the economic funds of the enterprise in conformity with established standards.

Article 41. The State Order for the Development and Delivery of New Equipment Which Contains an Invention

1. The enterprise, which has received a state order for the development and delivery of new equipment and the placement into operation of production capacities and objects of the social sphere, which contain inventions, is supplied with the centrally distributed material, technical, and financial resources, which are necessary for the filling of the order.

2. In case of the issuing to an enterprise of a state order for the production of equipment with the use of inventions, the patents for which belong to other enterprises or citizens, as well as foreign patent owners, the state ensures the acquisition of the rights to use the inventions and the allocation of the financial assets necessary for this.

Article 42. The Financing of Inventive Activity at the Enterprise and at the Budget-Carried Organization

1. The financing of inventive activity at the enterprise, with the exception of the payment of the reward to the

authors of the inventions and the bonuses to the people, who contributed to their development and use, is carried out by means of the assets of the fund for the development of production, science, and technology or other funds of similar purpose.

In case of a shortage of the corresponding assets credits of banks, assets of centralized funds, and, in necessary instances, budget allocations can be enlisted.

The budget-carried organization, which does not form economic stimulation funds, carries out the financing of inventive activity by means of the saving (revenues) from the use of inventions, which is left at its disposal in conformity with paragraph 6 of Article 39 of this Law, as well as credits of the bank, centralized funds of ministries and departments, and, in necessary instances, budget allocations.

2. The expenditures of the enterprise on the development of inventions for use in its own production, the effective impact from which does not find expression in the profit or revenue (labor safety procedures and labor safety techniques, nature conservation measures, the reduction of the sick rate, and so forth), are attributed to the production cost.

3. The assets, which are spent by the enterprise on the payment of rewards to the authors of inventions and bonuses to the people, who contributed to their development and use, are allocated from the profit (revenue) of the enterprise from the use of the invention in its own production or from the receipts from the sale of licenses prior to their distribution, are not included in the unified fund for the remuneration of labor, and are not taken into account in case of its standard formation and in case of the determination of the ratio of the increase of the average wage and labor productivity.

4. The income of citizens, which is allocated by them as contributions for the development of inventive activity at enterprises and at budget-carried organizations, is exempt from taxation.

Article 43. Regional Funds of the Financing of Inventive Activity

1. For the purposes of the financial support of the development and assimilation of objects of new equipment, which contain inventions, the Soviets of People's Deputies can establish regional funds of the financing of scientific and technical developments based on inventions.

The assets of local budgets and the contributions of enterprises, public organizations, and citizens can be the source of the formation of these funds. The indicated funds, which also operate in conformity with their charters on the conditions of full cost accounting, independently establish the procedure and conditions of the granting of credits.

2. The income of citizens, as well as the profit (revenues) of enterprises and public organizations, which are channeled by them as contributions into the regional funds of the financing of scientific and technical developments based on inventions, are not liable to taxation.

Article 44. Innovation Banks

Innovation banks are established for the promotion of the development of invention and the extensive use of scientific and technical developments and are cost accounting institutions, which carry out on a contractual basis the extension of credit to enterprises, organizations, temporary creative collectives, and individual authors for the development and use in the national economy of promising inventions. Innovation banks can share in the formation of joint works and in measures on the development and use of inventions.

Innovation banks mobilize for their credit operations the idle assets of enterprises, organizations, cooperatives, as well as individual citizens and attract on a contractual basis assets of the USSR State Bank and other banks.

Other functions, which are connected with the organization of creative scientific and technical work in the country, can be stipulated by the charters of innovation banks. The general supervision and monitoring of the activity of innovation banks are carried out by the USSR State Bank.

Article 45. The USSR State Patent Fund

1. The USSR Patent Fund is formed by means of assets of the state budget, revenues from the sale to foreign natural and juridical persons of licenses for inventions, the patents for which belong to the Fund, voluntary contributions of enterprises, public organizations, and citizens, as well as by means of the duties, which are levied in conformity with this Law, and the fines, which are exacted for the infringement of a patent.

Deductions in the amount of 1 percent of the annual profit (the corresponding part of the revenue), which has been derived by USSR citizens and Soviet enterprises and public organizations from the use of an invention, are also channeled into the USSR State Patent Fund.

2. The USSR Patent Fund in conformity with the charter, which is approved by the USSR Council of Ministers, is headed by a board. Inventors and representatives of state and public organizations are members of the board, which is elected on a democratic basis.

3. The assets of the USSR Patent Fund are used for the following purposes:

- the payment of the expenses on the development of inventions in promising directions of the development of science and technology;
- the gathering and dissemination of information on the use of inventions in the national economy;

- the promotion and development of creative technical work, the holding of all-union competitions of inventors;
- the financing of centers for instruction in creative inventive work;
- the stimulation of authors of important and promising inventions;
- the provision of material assistance to inventors in the development and verification of the technical solutions being proposed by them;
- the financing of work in the area of the improvement of the legal regulation of invention and patent affairs in the country;
- other purposes in the interests of the promotion of the development of invention.

4. The revenues of enterprises, state and public organizations, and citizens, which are channeled as contributions into the USSR Patent Fund, are not liable to taxation.

5. The USSR Patent Fund with respect to the patents, which belong to it, makes available at the request of the author of an invention information on its use.

Article 46. The Rewarding of the Author for the Use of an Invention

1. The reward to the author for the use of an invention, the patent for which has been issued in the name of a Soviet enterprise or public organization, is paid by this enterprise or public organization. In those instances, when the application for the issuing of a patent for an invention is submitted on behalf of several enterprises, the reward is paid to the author by each enterprise that uses the invention, if a different procedure is not stipulated by their agreement.

If the patent for an invention has been issued to the author and an enterprise (public association), a reward is not paid to the author; here the income of the author is formed from the portion of the profit, which was derived by the enterprise (public organization) from the use of the invention, as well as from the receipts from the sale by him independently or jointly with the enterprise of a license for this invention. In any case the income of the author should not be less than the amount of the reward, which is stipulated by this Law.

2. The reward to the author of an invention, the patent for which has been issued in the name of the USSR Patent Fund, is paid by each enterprise, public organization, or citizen, who uses the invention.

3. The enterprise, public organization, or citizen, who uses an invention, the patent for which has been issued in the name of the USSR Patent Fund, is obliged to notify it of this within 3 months from the start of the use of the invention and to conclude an agreement with the author on the payment of the reward.

4. The reward for the use of an invention during the term of effect of the patent is paid to the author in the amount of not less than 5 percent of the profit (the corresponding part of the revenue), which is derived annually by the enterprise (public organization) from its use, or the receipts from the sale of a license without the limitation of the maximum amount of the reward. The percentage is specified by the enterprise (public organization) by agreement with the author.

5. The reward for the use of an invention, the effective impact from which does not find expression in the profit or revenue, is paid by the enterprise or public organization in accordance with the procedure and in the amounts, which are established by the USSR Council of Ministers.

6. The reward is paid to the author no later than 3 months after the end of the year, during which the invention was used, and no later than 3 months after the receipts from the sale of the license have been received.

7. In case of the realization in foreign countries of an invention, the patent for which has been issued in the name of an enterprise (public organization) or the USSR Patent Fund, including in case of the sale of licenses and the delivery of products for export, the reward can be paid to the author at his request in foreign currency.

8. The administration of the enterprise or the management of the public organization can in consultation with the council of the labor collective also pay the author of the invention an incentive reward.

Article 47. The Liability for the Late Payment of the Reward

For the late payment of the reward the enterprise or public organization pays the author for each day of delay a fine in the amount of 1 percent of the sum that is due for payment.

Article 48. The Incentive for Contributing to the Development and Use of an Invention

1. The enterprise for 3 years from the date of the issuing of a patent for an invention pays the people (including people who do not work at this enterprise), who contributed to the development and use of the invention, bonuses regardless of the other types of bonus payments. The amount and the procedure of payment of the indicated bonuses are established by the administration of the enterprise in consultation with the council of the labor collective with the participation of the author. The amount of the bonuses to the managers of the enterprise is determined by the council of the labor collective.

2. The total amount of the bonus, which is paid for contributing to the development and use of an invention, should not exceed the reward which is received by the author of the invention from its use at this enterprise.

3. A bonus as if for contributing to the use of an invention is paid by the licensee to a planning organization for the use in a plan of an invention. The amount of the bonus is specified by the agreement of the planning organization and the licensee subject to the economic impact, which is specified in the plan, from the use of the invention. The bonus is paid by the licensee by means of the assets of the fund for the development of production, science, and technology or another fund of similar purpose.

The assets, which have been received from the licensee for contributing to the use of an invention, are channeled into the material incentive fund of the planning organization.

IV. The State and the Inventor

Article 49. The Rights and Privileges of Inventors

The state establishes for inventors additional privileges in the area of labor relations, the granting of living space, retirement security, and the consolidation of the social status of the inventor.

Article 50. Labor Rights

1. The author has the right to participate in the operations on the preparation of the invention for use in production (in the drafting of technical specifications, the production and testing of the prototype, the organization of production) and to carry out the author's supervision of the performance of these operations.

2. For participation in the preparation of an invention for use in production and the carrying out of author's supervision the author can be completely or partially relieved for a time from the performance of his basic job with remuneration of labor in the amount of not less than the average wage received by him, while in case of the performance of these operations outside the place of permanent work a labor contract with remuneration of labor subject to the complexity of the job being performed is concluded with the author.

3. The position, the right to leave, the right to a continuous and special length of service, and the other rights and privileges, which have been established for the place of permanent work, are reserved for the author of an invention, who has been relieved from his basic job.

If the work of the author at another enterprise lasted not less than 11 months, regular leave is granted to him at the place of this work.

4. The amount of compensation of the additional expenses of the author of an invention, which are connected with participation in the operations on the use of the invention or the carrying out of author's supervision

outside the place of his permanent residence, is established in accordance with the contract with the interested enterprise.

5. At the request of the author a note is made in his labor book on the inventions which have been used in production.

6. Disputes, which arise in connection with the exercise of the labor rights of the authors of inventions, are considered in the manner which is specified by labor legislation.

Article 51. Housing Privileges

The authors of used inventions, which are of great national economic importance, are provided with additional living space in conformity with prevailing legislation.

Article 52. Pension Benefits

The author of an invention, who is on a pension and participates in the work on the use of his invention, retains the right to receive the pension in the full amount during the entire period of this work.

The reward, which is received by the author from the use of his invention, is included in the amount of the wage, on the basis of which the pension is calculated.

Article 53. The State Stimulation of the Inventor

1. At the request of the author of an invention, which is of great national economic importance, the name of the author or a special name can be conferred on this invention by a decision of the State Committee for Inventions and Discoveries.

2. The honorary title "Honored Inventor of the USSR" can be conferred on the author of an invention, which opens a new direction in the development of science and technology, by the Presidium of the USSR Supreme Soviet upon the representation of the USSR State Committee for Science and Technology, a ministry, a department, a Council of Ministers of a union republic.

The honorary title "Honored Inventor of the Republic" can be conferred on the author of an invention, which is of great national economy importance, by the Presidium of the Supreme Soviet of a union or autonomous republic.

3. The academic degree of candidate or doctor of sciences of the corresponding type without the defense of a dissertation can be conferred on the author of an invention, the use of which made it possible to solve an important scientific and technical problem in the national economy, by the Higher Certification Commission attached to the USSR Council of Ministers upon the

representation of the USSR State Committee for Science and Technology and the USSR Academy of Sciences.

4. The badge "Inventor of the USSR" is presented to the author of an invention when issuing the first patent.

Article 54. The Inheritance of the Rights of the Author of an Invention

The right to submit an application and to receive a patent for an invention, the exclusive right to use an invention, as well as the right to the reward and revenues from the use of an invention are inherited.

Article 55. The Courts Which Consider Disputes That Are Connected With Inventive Activity

Disputes, which are connected with inventive activity, are considered by:

- the people's courts;
- the judicial collegiums for civil cases of superior courts;
- patent courts—kray and oblast patent courts, the patent courts of autonomous republics, the list and territorial jurisdiction of which are established by the legislation of the union republics;
- the patent courts of the union republics;
- the USSR Patent Court.

Article 56. The Organization and Competence of the Courts Which Consider Disputes That Are Connected With Inventive Activity

1. The people's courts and the judicial collegiums for civil cases of superior courts are competent to consider disputes which are connected with inventive activity, with the exception of the categories of disputes, which are assigned to the competence of patent courts.

2. Kray and oblast patent courts, the patent courts of autonomous republics, and the patent courts of union republics, which do not have an oblast division and do not contain autonomous republics, consider as courts of the first instance the following categories of disputes:

- on the authorship (joint authorship) to an invention;
- on the establishment of the patent owner, including when the patent for an invention is issued jointly to the author and an enterprise (public organization);
- on the violation of the property rights of the owner of the patent for an invention;
- on the conclusion and fulfillment of a license agreement on the use of an invention, including in case of the issuing of a simple license by one of the patent owners (the author or the enterprise);

- on the monetary compensation for the use of an invention during the period of its temporary protection and its amounts;
- on the amount of the share of the economic impact in the price of a product that is obtained due to the use of an invention;
- on the right of prior use.

3. The patent courts of the union republics, which have an oblast division or contain autonomous republics, consider the categories of disputes, which are indicated in paragraph 2 of this article, as appellate courts.

4. The ruling on a dispute, which has been made by a patent court of a union republic, is not subject to appeal.

5. The USSR Patent Court considers as a court of the first instance the following categories of disputes:

- complaints against decisions of the Higher Appellate Council of Patent Examination attached to the USSR State Committee for Science and Technology on the refusal to issue a patent for an invention or against the issuing of a patent with the improper indication in it of the extent of the protected patent rights;
- suits for the recognition of an issued patent as invalid in part or in full;
- petitions on the making of changes in the composition of the joint authors in an issued patent;
- on the granting of compulsory licenses and the amounts of the payments with respect to such licenses;
- on the amount of compensation in case of the compulsory purchase of a patent.

6. The USSR Patent Court considers for purposes of supervision in accordance with the objections of the chairman of the USSR Patent Court cases which have been settled by the patent courts of the union republics. The ruling on a dispute, which has been made by the USSR Patent Court, is final.

7. The chairman, the deputy chairmen, the members, and the people's assessors of the USSR Patent Court are elected by the Presidium of the USSR Supreme Soviet.

8. The organization and the procedure of the activity of the USSR Patent Court are specified by the Statute on the USSR Patent Court and the Regulations of the USSR Patent Court, which are approved by the Presidium of the USSR Supreme Soviet.

Article 57. The Liability for the Violation of the Rights of the Authors of Inventions

The appropriation of authorship, the compelling of joint authorship, and the divulgence of the essence of a proposed invention before the submission of an application without the consent of the author entail criminal or other liability in conformity with prevailing legislation.

Article 58. The Liability of Officials for the Violation of Legislation in the Area of Invention

Criminal, administrative, and other proceedings are instituted in conformity with prevailing legislation against officials who are guilty of committing the following acts:

- the infringement of the rights and legal interests of inventors;
- the inclusion among the joint authors of people who did not take a direct creative part in the development of an invention;
- red tape and a negligent or unconscientious attitude toward their duties when drawing up applications for inventions, as well as when using inventions;
- the submission of unreliable state statistical reporting on the use of inventions.

Article 59. On the Guarantee of the Observance of the Rights of Inventors

Central and local organs of state power and management bear responsibility for the observance of the provisions of this Law, are guided by them when adopting enforceable enactments, which are connected with the activity of inventors, and form their relations with them in strict conformity with this Law.

V. The Final Provisions

Article 60. The Legislation on Inventive Activity in the USSR and the Union Republics

The legislation on inventive activity consists of this Law and other acts of legislation of the USSR and legislation of the union republics on questions which have been assigned to their jurisdiction.

Article 61. The Rights of Foreign Citizens, People Without Citizenship, and Foreign Juridical Persons

Foreign citizens, persons without citizenship, and foreign juridical persons enjoy the rights, which are stipulated by this Law and other acts of legislation of the USSR and the union republics on invention activity, on the same level of citizens and juridical persons of the USSR, if another thing does not follow from this Law and other acts of prevailing legislation.

Article 62. The Rights of Joint Ventures and International Associations and Organizations

1. The provisions of this Law are used with respect to joint ventures and international associations and organizations, which have been established on USSR territory with the participation of Soviet enterprises and foreign enterprises, organizations, and firms.

2. The procedure of issuing mandatory licenses, which is stipulated by paragraph 1 of Article 33 of this Law, is not used with respect to joint ventures and international associations and organizations.

3. The patenting in foreign countries of inventions, which have been developed at joint ventures and international associations and organizations, as well as the organization of inventive activity at the indicated ventures, associations, and organizations are carried out in conformity with their constituent documents.

Article 63. International Treaties

If different rules than the ones, which are contained in Soviet legislation in the area of invention, are established by a USSR international treaty, the rules of the international treaty are used.

Discussion on New Draft Law on Patents, Inventions

Letters to PRAVDA

18140110a Moscow PRAVDA in Russian 4 Jan 89 p 3

[Letters to PRAVDA under the rubric "We Are Discussing the Draft of the Law on Inventive Activity in the USSR"]

[Text]

A Basis Exists

The draft of the Law on Inventive Activity in the USSR is, in my opinion, a good basis for the protection of the rights of inventors and the state management of invention in the country. The authors of the draft essentially took into account domestic and foreign experience. This concerns, for example, the legal classification of technical solutions, the group of objects that can be protected, the privileges for inventors, and the role of the state in this sphere. The protection by special legislation of new strains of plants and breeds of animals is envisaged—that, strictly speaking, is how they act in the majority of countries of the world. I support the legal concept of an invention, the introduction of the deferred examination of applications, and the establishment of a patent court.

It is especially important that the requirements of the present economic policy of the Soviet state are reflected in the draft. And still it is premature to say that it completely satisfies specialists. Without aspiring to a thorough analysis of the draft, I will touch upon several of its provisions.

The draft contains the customary declarations and loud expressions. It seems that words like "utmost" and "comprehensive" are unbecoming of such an act. In its preamble, I believe, the goals and tasks of the Law should be stated more briefly and Article 1 itself should be eliminated.

Section I of the draft specifies the system of the organization of invention in the USSR often from the standpoint of administrative "towers." Evidence is the directive nature of the content of a number of paragraphs of Article 3 of the draft. It is also impossible to agree with the fact that a secondary role has been assigned to the Soviets of People's Deputies—after ministries and departments. Now in general doubt is being voiced about the expedience of the existence of these organizations of management, here they are being given great powers. That is why in this section I liked only the content of Article 2. But its wording could be different.

In section II the terms "novelty" and "unobvious nature" of technical solutions, in my opinion, are legitimate. Their legal content is also presented rather well. As to the third qualifying attribute—"production applicability," such a definition is poor. In fact this is the narrowing of the patentability of an invention, which gives grounds to contest nearly any technical solution, which has been submitted by a third person for defense. It is better to insert the term "practical use," that is, the use of an invention under various conditions, and not only under production conditions.

It is worth considering how validly it is proposed not to recognize algorithms and programs for computers as inventions. Indeed, we have fallen greatly behind here, and the patenting of such objects by foreign applicants can entail certain problems. But one must also not forget that their patent protection will be a stimulus for Soviet inventors as well.

A few remarks on what did not find a place in the draft of the Law. There is no norm on the right to post-use. In life it can happen that a patent will cease its effect early for reasons that do not depend on its owner. For example, owing to a court judgment, which was subsequently recognized as illegal. The patent duty during this time was not paid, and the patent became void. Other people began to use it, invested assets, and so on. But now the patent has been reinstated. How should the people, who began to use it during the period of inactivity, act? But the recognition for them of the right of post-users.

A fundamental aspect of the draft is the introduction of one form of protection of inventions: the patent. Let us be thoroughly consistent. One must call its owner [sobstvennik] the patent owner [patentovladelets], and not the patent owner [patentoobladatel].

The country waited a long time for the draft of the Law on Inventive Activity in the USSR. The delay in many respects was explained by the lack of preparation of

science, including juridical science, and practice for the fulfillment of the social order of the state, this was also reflected in the draft itself. Of course, we lag greatly behind many countries in the protection of inventions. Even more seriously in the protection of biological objects (strains of plants, breeds of animals, and so forth). A breakthrough in this respect, it seems, has appeared. Article 8 of the draft envisages the protection of such objects by special legislation. It is necessary, I believe, to begin its preparation immediately.

[Signed] Candidate of Juridical Sciences V. Levchenko, senior scientific associate of the Institute of State and Law of the USSR Academy of Sciences

Not Only Patents

In the Law on Inventive Activity there should, in my opinion, be envisaged the issuing of not only patents for inventions, but also inventor's certificates on the presently existing basis. The point is that the author in conformity with the draft of the Law should pay duties for the acceptance for consideration of an application for the obtaining of a patent, the making of an examination, the issuing of a patent, its keeping in force, as well as for the performance of other legally significant actions that are connected with the patent. Overall, judging from the cited list, considerable duties. But far from every applicant (especially independent authors) will be able to get these expenses from his personal budget. Not everyone will also decide to go into debt on such an occasion. Not everyone will be able also to find other interested people or organizations, which will agree to these payments for him.

It seems that patenting and patenting alone will lead not to the increase of inventive activity in the country, for which, strictly speaking, the Law is also intended, but to the sharp decrease of the activity of inventors.

The people, who develop new technical solutions, need assistance, moreover, regardless of in what sector of production the proposed inventions can be used. Therefore, in the new legislation there should be envisaged mandatory free technical assistance to authors at their place of work and, for nonworking authors, at organizations of the All-Union Society of Inventors and Efficiency Experts.

[Signed] A. Rabinkov, engineer, inventor.

Moscow

The Darkened Dawnings

I have more than 20 author's certificates for inventions. But I could develop many more. How many dawns have darkened due to the lack of demand for new technical solutions!

At all levels of the management hierarchy already partially obsolete, but to a significant extent fresh developments are collecting dust by the many thousands. But the painstaking, most highly creative activity of highly skilled specialists lies behind them.

In the draft of the Law steps on the quicker implementation of inventions are envisaged. This is mainly for the future. But one must also not forget the reserve that already exists.

[Signed] Professor V. Slesarev

Omsk

Letters to IZVESTIYA

18140110b Moscow IZVESTIYA in Russian
5 Jan 89 p 3

[Letters to IZVESTIYA under the rubric "We Are Discussing the Draft of the Law on Inventive Activity in the USSR"; first paragraph is IZVESTIYA introduction]

[Text] Today we are commencing a new rubric which is devoted to the discussion of the draft of the Law on Inventive Activity in the USSR (it was published in IZVESTIYA, No 362, 1988). From the letters, which have been received by the editorial board, there have been selected for the first publication such letters, which contain suggestions on key items of the draft.

Means Wide of the Mark

Unfortunately, the draft of the Law, which is being discussed, turns inventions from means of developing new equipment and new materials and technologies into something opposite, inasmuch as there is recognized as an invention only "...the technical solution of a problem, which has novelty, an unobvious nature, and production applicability." In this definition the main thing is lacking—the criterion of "a positive impact." Moreover, the Law limits the right of the inventor to dispose independently of the result of his creative work. Both in aggregate are fraught with serious costs under the economic conditions that have formed today, when the required market mechanism of the management of the economy is lacking, while prices on the market are not limited. Therefore, the indicated factors can turn the inventor into a source of ideas and solutions, which are expensive, but harmful to the consumer and society as a whole and which will meet only the requirements of the monopolist—the producer of goods.

While encouraging the increase of the dictation of the producer, the Law at the same time erects barriers in the way of the development of solutions which are ahead of their time. This follows from the above-cited definition of an invention, the criteria of which, in addition, allow ambiguous interpretation.

The period of the first examination of applications in conformity with the rules in effect today is limited to 6 months. The draft worsens this situation: the period can be extended to 4(!) years. During this period, which oddly is called in the Law "the period of the temporary legal protection of inventions," the applicants simply are not materially interested in the use of their technical solutions, which will do enormous economic harm to the country, while the solutions themselves may become obsolete.

The Law regulates the replacement of inventor's certificates with patents of a limited term of effect, which are assessed an annual duty. In this connection the question of the fate of approximately 1.5 million inventions, which are protected by USSR inventor's certificates, arises. For many of them are of great importance and can be used. The same thing also concerns inventions which have led their time. Therefore, it is necessary to continue the practice of issuing inventor's certificates and, on request, the corresponding patents. Otherwise the wings of present-day Tsiolkovskiy and Korolev will be clipped.

The orientation of the Law not toward the ultimate goal, not toward the development of new equipment and new materials and technologies, but toward the means of its achievement—toward inventions—also gave rise to the corresponding conception of license policy, which is regulated in the Law—the orientation toward the sale of licenses for the use of inventions.

Inventions are an important, but not the only means of developing a qualitatively new product which the consumer needs. A overwhelming portion of the inventions are aimed only at the improvement of individual characteristics of some items or others. A comparatively small number of inventions ensure qualitative changes. Moreover, as a rule, in combination with other results of intellectual activity, which are not recognized as inventions. Therefore, it is advisable to revise the economic mechanism of the use of inventions, which is regulated by the Law being discussed, on a broader level, for the purpose of formulating the principles of state patent and license policy, which is aimed at trade in designs of new equipment and new technologies.

The provisions on the material stimulation of inventors seem involved and complicated. The concept of patent ownership, which is declared by the Law, ostensibly protects the material interests of inventors. However, in practice the patent holder will not be able to exercise the rights of prohibiting the use of an invention, while this means the right of trade.

Such are the first impressions from the Law, which, of course, are far from complete and to some extent subjective. They worked 8 years on the Law. During this time much has changed in our country. We have to introduce a market mechanism of the management of the economy, which objectively will have to combine the

interests of the consumers and producers of products. Unfortunately, such a concept is not traced in the draft of the Law.

[Signed] Candidate of Technical Sciences M. Gelman

It Will Be Immediately Evident

If we want the intellectual potential of society to be used more effectively in our country, it is necessary to ensure the registration of all worthy inventions and their quickest introduction in practice. The administrative staff of the State Committee for Inventions and Discoveries and the State Committee for Science and Technology and various expert councils are standing in the way of this.

The whole point is that we have a monopoly on the acceptance of inventions. But imagine that the author of a rejected application or even a "patent owner," having gone to an awful lot of trouble with introduction in the corridors of our departments, turns to a foreign firm with his invention, while there they will register it, will introduce it, and will pay a reward. For some enterprising Japanese person lives on "Small Tricks" from NAUKA I ZHIZN and other popular publications of ours, while here there are serious inventions!

It is here that our bureaucrats and official procrastinators will be embarrassed, and, as they said during the times of Peter, "the folly of everyone will be immediately evident."

It is necessary to oblige the State Committee for Inventions and Discoveries to select the enterprises, at which it is expedient to introduce inventions. For experts, and not registrars of documents, are or, at least, should be on the committee. And if the experts and curators overlooked an invention or timely introduction, it is also possible to draw administrative conclusions. For example, to reject the services of the experts and curators, who make mistakes.

In paragraph 2 of Article 30 it is written that "the patent owner should exercise the rights, which are granted by the patent, without detriment to the interests of the state and society." But in the same article in paragraph 5 it is stated that the transfer of the right to use an invention to foreign natural or juridical persons is carried out in accordance with the procedure specified by the USSR Council of Ministers. This is a vague formula.

I propose to include in this paragraph the following addition: "Rejected applications for inventions, as well as inventions, which have not been accepted for introduction after the publication of the report on them within 1 year, can be transferred freely to foreign natural or juridical persons."

[Signed] R. Yuzhinskiy, engineer

Kiev Oblast

Is the Algorithm in Disaster?

Having become acquainted with the draft of the Law on Inventive Activity in the USSR, you involuntarily ask a question that sets your teeth on edge: What millennium, dear people, are we in? By the calendar, you see, it seems we are on the threshold of the 3d millennium, but you will look at paragraph 6 of Article 6 and will have doubts. We are entering, in contrast to so many people who have already entered, the computer age, are speaking about universal and complete computerization, officially regard software as a product for production engineering purposes, but simply cannot understand what an algorithm is.

It is a question not of the public at large, but of so-called specialists, who wrote the draft and gave advice. In the mentioned article algorithms and programs are mixed up—but this is equivalent to confusing technology and a device. An algorithm is a method of working with information, be it the computation of the aerodynamic characteristics of a spacecraft, the calculation of the optimum plan of transportation, the modeling of complex natural phenomena, and the solution of other serious mathematical problems, which are of great national economic importance.

Therefore, it is incomprehensible to us, and not only us, why a method of synthesizing some substance can be an invention, while a method (algorithm) of computing the trajectory of Buran cannot. We propose in Article 6 in paragraph 6 to eliminate from the list of what is not recognized as an invention the concept "algorithm," and to read paragraph 5 as follows: "a method (including an algorithm,...)" and so on according to the text.

[Signed] Candidate of Physical Mathematical Sciences
L. Vyshinskiy

Candidate of Technical Sciences V. Shilenko

Moscow

Chief of State Inventions Committee on Proposed Patent Law

18140120a Moscow SOTSIALISTICHESKAYA
INDUSTRIYA in Russian 7 Jan 89 p 1

[Interview with Ivan Semenovich Nayashkov, chairman of the State Committee for Inventions and Discoveries, by Ye. Temchin under the rubric "The Law on Invention: Your Opinion?": "Let the Truth Be Born in the Debate"; date and place not given; first paragraph is SOTSIALISTICHESKAYA INDUSTRIYA introduction]

[Text] Inventors waited for more than 2 years for the draft of the Law, which should raise the creative technical work of innovators to new heights. During this time, it would seem, it was possible to polish every line, every article. But, as the editorial mail shows, in the published

draft there are many blank spots and controversial provisions. Why did they remain in the long awaited document? How is one to explain the vagueness of a number of formulas? What is behind several new concepts? Today Chairman of the State Committee for Inventions and Discoveries I. Nayashkov answers these and other questions.

[I. S. Nayashkov] We all hastened the progress of the work on the draft of the Law on Inventive Activity in the USSR, at first without realizing that it can be written only after two other legislative documents—on the state enterprise and on the cooperative. For the basic principles of the economic reform, under the conditions of which the new Law should create the prerequisites for the successful development of invention and the extensive use of its results in the national economy, are set forth precisely in them. For this it is necessary to sweep away the stereotype of the seizure of inventions by enterprises and sectors and to legitimize forever the notion that new technical solutions are the basis of scientific and technical progress.

On the other hand, in contrast to the patent laws of other countries, which only protect the patent rights of the patent owner, our Law should also become a means of the social and legal protection of the inventor and guarantee him the creation of the necessary favorable conditions for work.

[Question] I must say that your last assertion agrees poorly with the duty for the submission of an application, which is envisaged in the draft. I do not think that the duties for subsequent actions, which are connected with the obtaining of a patent, also will be greeted by inventors with enthusiasm. Until now it was sufficient for the applicant to buy an envelope with a stamp. Now, as well-informed people assert, the first duty alone—for the preliminary examination and temporary protection of the application material—will come to about 40-50 rubles. While for all the operations, which are connected with the issuing of a patent, one will have to pay 200-300 rubles. Far from every inventor will have such sums.

[I. S. Nayashkov] I agree, there is a question here. But what is one to do, if the entire national economy changes over to cost accounting? And, hence, to paid services? But, on the other hand, this does not at all mean that the inventor should pay from his own pocket. The enterprise or organization, which is interested in using the invention, can assume the payment. Cooperatives, public organizations like the All-Union Society of Inventors and Efficiency Experts, and various funds can also perform the role of sources of financing.

At the same time it is also necessary to increase the liability of the applicant—after all, in case of success he will receive a reward. Moreover, the amounts of this reward in contrast to previous practice are not limited to any specific sums. Remember what trouble it was for the

inventor to succeed in obtaining rewards and how enterprises agreed to all kinds of tricks in trying to pay as little as possible! Now an end should be put to such a practice. The draft of the Law provides for the payment to the author of not less than 5 percent of the annual profit which is derived from the use of his invention everywhere that the innovation developed by him has found application. And very large sums can be behind these 5 percent.

[Question] No one disputes that in the draft there are many provisions which have been greeted with satisfaction by inventors. But there are also things, which seem frankly questionable and seem not to take into account the real possibilities. Sometimes one gets the impression that the people, who worked on the draft, are very far from life. Take, for example, the provision which requires the publication of applications before the patent examination. Given our modest publishing reserves, how is this to be done in practice?

[I. S. Nayashkov] According to the idea, the preliminary publication of applications should help the potential user of inventions to become familiar with them in advance. If he knew who is working on what and how it is proposed to solve one technical problem or another and, finally, if the solution seemed to him to be successful and useful for his enterprise, he would probably try to help the inventor. For example, the enterprise not only will assume the costs of patenting, but will also help to embody the idea in metal and in the performance of experimental work. While preliminary publication will enable the commission of patent experts to evaluate an innovation objectively. Of course, one will have to expand the opportunity for publications of applications. But here there are not the variants: if you want to improve the organization of the matter, pay.

[Question] It is possible to foresee that the most heated disputes will take place around the provision of the draft on the joint ownership of a patent. Until now all patents guaranteed the exclusive right of ownership to the owner of the invention. If, of course, he had not sold it to a firm. But the draft asserts that this right can be divided between the author and an enterprise. I foresee here a large number of unpleasant clashes. For example, the author of an invention wants to sell his patent somewhere on the side, but the joint owner objects...

[I. S. Nayashkov] Yes, this provision of the draft does not conform to the patent legislations and practice of other countries. It appeared as a result of a compromise between diametrically opposed views on the owners of property. It is clear that this attempt to remain sitting simultaneously in two chairs will hardly suit the majority of inventors. But the opinion of economic managers, who have to both buy and sell patents, personally interests me more. In short, I hope that the extensive discussion of the draft will help to define more exactly the attitude of the public toward this legal question, which, in my opinion, is very controversial and difficult.

[Question] And how do you feel about the Patent Courts, which are envisaged in the draft?

[I. S. Nayashkov] Most positively. Patent Courts are our old dream. While after the passage of the Law on Inventive Activity they will become absolutely necessary. Until now various disputes, which are connected with inventions, have arisen not that often. Therefore, although judges, who, as a rule, do not have special training, considered them, the negative consequences of mistakes were relatively minor. But now we do not have the right to tolerate such a practice. World experience shows that the special training of the judicial legal staff is required for the successful pleading of invention cases. Special patent courts for a long time now have been operating abroad. While others simply do not undertake to consider cases which are connected with patent law.

[Question] Does it turn out that now the inventor will be able to bring action in court and in the State Committee for Inventions and Discoveries? For example, if he believes that with respect to his application the expert commission committed illegal actions?

[I. S. Nayashkov] Well, it is necessary to answer for illegal actions. This concerns not only the expert commission or our committee, but also everyone who takes it into his head to infringe on the rights of the inventor.

[Question] Ivan Semenovich, in the draft of the Law such an innovation as the USSR Patent Fund is spoken about. Judging from the idea, it should be a certain all-union bank of inventions, which is capable of giving assistance both to the creators of something new and to the users of their products. It will be able to carry out commercial operations on the sale of inventions both in our country and abroad. However, in the draft it is not stated how this fund will be replenished. Where are the guarantees that it will not turn into a storehouse of inefficient inventions, but will become a repository of the most valuable technical solutions?

[I. S. Nayashkov] Let us take a simple example. Suppose that I invented something, with which I do not want to bother—to seek a user, to help him assimilate the invention, and to keep track of how he uses it. In short, I want to avoid all these troubles and am willing to transfer the rights to the invention together with the patent in exchange for the corresponding compensation.

The Patent Fund should also perform the role of a kind of buyer. But its personnel are obliged to understand that one invention or another might prove not to be needed by anyone. And the money will be spent in vain. In order to avoid this, the fund should make a careful selection of inventions and bear responsibility for their quality. In this connection it will need an institute of highly skilled experts.

[Question] Until now subdivisions of the State Committee for Inventions and Discoveries have dealt with

selecting the most valuable technical innovations for the national economy, recommending them then to ministries and departments for use. Considerable experience has been gained in the area, no department has as complete patent information as the State Committee for Inventions and Discoveries. So why not also transfer the Patent Fund, which is being established, to the jurisdiction of the committee?

[I. S. Nayashkov] This step is probably advisable, although it would cause considerable organizational difficulties. We have ideas on how to organize better the work of the fund. But I would not want to talk about this until the main question has been settled: Under whose jurisdiction will the fund be?

[Question] Wait a minute, how could it have happened that in the draft of the Law such an important question remained open? Did the State Committee for Inventions and Discoveries really not set the tone during its preparation?

[I. S. Nayashkov] The work on the draft of the Law took place at several stages. At first representatives of the State Committee for Inventions and Discoveries and well-known inventors, personnel of patent services, and lawyers, who were enlisted in this matter, performed it. At the subsequent stages, after a series of discussions with representatives of plants, institutes, ministries, and departments, the State Committee for Science and Technology, the USSR Academy of Sciences, and the USSR Ministry of Justice actively participated in the work. In short, the document submitted for discussion is the fruit of collective labor. Of course, the draft does not lack shortcomings. But we hope that its extensive discussion will make it possible to eliminate them. Let the truth be born in the debate.

Positive Features of Proposed Patent Law Stressed

18140120b Moscow SOVETSKAYA ROSSIYA
in Russian 14 Jan 89 p 2

[Interview with Doctor of Juridical Sciences Vitaliy Petrovich Rassokhin by G. Orlovskiy: "The Safe-Conduct of Research. On the Draft of the Law on Inventive Activity in the USSR"; date and place not given; first paragraph is SOVETSKAYA ROSSIYA introduction]

[Text] Invention is a special kind of activity. In it there are fusion and knowledge, the dawning of an idea, and the immeasurable straining of all the intellectual, spiritual forces of man. Its result is always a new step of progress, a breakthrough in science, engineering, and technology. But how many torments invention brings, and not only, unfortunately, creative torments. With what difficulty an innovation finds recognition, how the champions of progress fought and are fighting for their own discoveries, which people so need! Is it necessary to cite examples of the troubles which tens of the most capable engineers, scientists, and workers have endured

in order to prove the obvious? Our common interest is: to stimulate inventive activity in every possible way, for it guarantees scientific and technical progress. What role can law play here? Our conversation with Doctor of Juridical Sciences Vitaliy Petrovich Rassokhin is about this.

[Question] Is it possible by the norms of a law to induce invention? What, then, is the point of the draft of the law, which has been offered for discussion?

[V. P. Rassokhin] Law cannot induce creativity, this is approximately the same thing as demanding that the relations of love and friendship be regulated by the norms of a law. Fortunately, in this sense law is not omnipotent. But it can do much: first of all it can guarantee the rights and interests, which are important for society. But what is now more important for us than a breakthrough to a new quality in science and production? Here, too, inventors are in the front ranks. It is their research, rights, and interests that our laws protected very, very poorly. Not only the administrative command system in the economy, but also the steadfast adherence of our law to several myths prevented the inventor from creating and society from enjoying the fruits of his labor.

One such myth is: the author's certificate for an invention, they say, conforms best to the needs of the socialist economy, for it makes it possible to use inventions freely in the national economy, without payment and without any permits. In reality the lack of reciprocal rights and duties (both of inventors and of enterprises) led merely to inventions being in abeyance and to the impossibility for authors to obtain the legal reward without a heart attack. When no one owes anyone and is obliged to anyone, there is essentially no one from whom to demand something: the rights of the inventor to a reward and of the enterprise to the derivation of profits from introduction were only proclaimed.

This myth was supported by assertions about the "sanctity" of the author's certificate, which was introduced by Lenin's decree in 1919. No one wanted to see the deep essence of the decree, which regarded the rights of the inventor as of paramount importance. Moreover, an obvious substitution occurred: the author's certificate in its present state is a legal form of the era of the industrialization of the country, which was introduced in 1921. But this is already a different document than the author's certificate of 1919; it also deprived the inventor of real guarantees and the enterprise of genuine interest.

[Question] Does this mean that the draft of the law on inventive activity turns everything upside down?

[V. P. Rassokhin] At any rate it affords such an opportunity. I believe that a true merit of the draft of the law is the changeover to the patent form of the protection of inventions. More simply speaking, the invention becomes a commodity. While this also corresponds to the needs of the

socialist cost accounting, market economy. After all, what is a patent? It is a legal form which, as they often say, gives the right of ownership of an invention. Let us define it more precisely, in legal language, as follows: the patent gives the owner the exclusive right to use the invention and to dispose of it. Here the "free" use of an invention belonging to someone else is already out of the question. Guarantees of reciprocal rights and duties are incorporated in the patent.

[Question] You are talking only about one innovation of the draft of the law. But it interprets much more broadly the questions of invention. In general is it possible to encompass by one law an entire sphere of human activity?

[V. P. Rassokhin] This is a "sore point." The belief in decrees has become very ingrained in us, that is why we are also trying to incorporate in the draft of the law as much as possible. In this draft we also tried to encompass two different, although interconnected spheres of relations: the organization of invention and patent relations proper. Thus there appeared in the draft of the law general provisions on the role of invention in the development of the socialist economy, on the enterprise—as the basic unit in the organization of inventive activity—and on the tasks of the State Committee for Science and Technology and the State Committee for Inventions and Discoveries. This is important, like program directives, perhaps, and a law on the principles of state policy in a most important sphere—the development of invention—is needed. But this is not directly connected with the introduction of the form of the protection of inventions, which is fundamentally new for us. Apparently, the drafting of a special patent law would also be advisable—after all, under the new conditions of management the author and the enterprise are interested first of all in it.

Still we will proceed from the fact that the draft has been proposed, as they say, "as a whole." It is dictated by the needs of society—this is indisputable. Hence, it is necessary to try "to raise the plank": to incorporate in the draft all the achievements of juridical and patent culture.

[Question] If I understood correctly, as a whole you give the draft of the law a positive appraisal, but have specific remarks and suggestions.

[V. P. Rassokhin] The comprehension of the invention as nearly the most valuable commodity determines my position. The scientific and technical revolution brought this new attitude toward the invention. In the draft of the law such approaches are visible. This is good. But for the lawyer, who is anxious about the interests of the author, there are no trifles in the law.

When it is a matter of a person working alone, an independent inventor, the legal picture is clear: he is the owner of the patent! But let us see whether his rights are sufficiently guaranteed in the situation which is most prevalent today throughout the world—in case of the

development of the so-called job-related invention. What is meant? If the author works at an enterprise and produces an invention, which is connected with the fulfillment of the assignments of the firm, according to the general rule the patent belongs to this firm.

In the draft in Article 12, paragraph 2 it is specified that a patent is issued in such a situation to the author and the enterprise jointly. They seem to have proceeded from good intentions. But it is easy to foresee that the joint ownership of a patent will give rise for the author to a legal situation, which is hard to resolve, and instead of guarantees of his rights can serve as the basis for litigations with the enterprise. World patent legislation does not know the joint ownership of a patent on a job-related invention. In my opinion, it is necessary not to knock together the heads of the inventor and the enterprise, but to stipulate exactly the conditions, when the patent can belong only to the enterprise, but in so doing to clearly guarantee the rights of the author. We will recall that the majority of inventions originate during the labor activity of the innovator, for which he receives a wage.

The idea of the law on the establishment of the USSR State Patent Fund as a special organization, to which the rights to obtain a patent pass, if the inventor renounces it in favor of the state, is good. In this case the author frees himself from the troubles with introduction and from the necessity to pay duties. (After all, everything connected with obtaining a patent and keeping it in force is by no means free.)

Of course, the possession of a patent to a valuable invention now in accordance with the law will yield considerable profits. But it will accordingly require both expenses and organizational work—the search for a buyer, the conclusion of contracts, and so on. A service bureau will apparently be required to aid the inventor. So that the formation of the Patent Fund is in general in the interests of inventors. But it is also necessary to stipulate more clearly the obligations of the fund to the inventor (Article 45 of the draft is meant).

I can only greet the modern definition of the invention itself in the draft of the law, which satisfies the criteria that were formulated by the European patent system: novelty, an unobvious nature, and production applicability. It is only a pity that the priority of an invention is determined by the date of arrival of the application directly at the State Committee for Inventions and Discoveries. One would like to know: But what are inventors from Vladivostok, Murmansk to do? In this way it is only too easy to lose first place not through their own fault.

It is correct that the USSR Patent Court, as well as the Higher Appellate Council of Patent Examination attached to the State Committee for Science and Technology are being established. All this will actually guarantee the rights and interests of inventors. The draft of the law, of course, is not easy for laymen and people, who are far removed

from the problems of invention, to read. But as a patent expert I can say that this is an important step in the legal reformation. I would like in conclusion to report that a new public organization has been established—the All-Union Association of Patent Experts. It is also called upon to help the new law enter life.

Dissatisfaction Expressed With Proposed Patent Law

Plenum Delegates React
18/40/21 Moscow *IZVESTIYA* in Russian
12 Jan 89 p 2

[Article by S. Leskov: "They 'Invented' the Law Not for Inventors, the Delegates of the Plenum of the Central Council of the All-Union Society of Inventors and Efficiency Experts Believe"]

[Text] The inventor, this person who wanders among offices and is not needed by anyone, has become a passing character of anecdotes. Why has an ironic attitude formed toward inventive activity, to which artist Leonardo da Vinci, chemist Mendeleev, cavalry general Treppelin, ethics teacher Morze, and physicians Fedorov and Ilizarov gave their inspiration? And this is given the fact that inventors are necessary for a works of the smallest capacity, without them it is doomed to stagnation. "What is good for Ford, is good for America"—if you look into it, there was not special boasting in this well-known motto. And it is true, after all, the flourishing of plants strengthens the state. Developing this thesis, it is possible to say: what is good for the inventor, is good for all society.

It remains to draw a conclusion: the lack of rights and the poor organization of our inventors are a consequence of imperfect legislation. Hence, it is necessary to devise such a law, so that it, first, would promote the firm establishment of bright ideas in the largest possible number of heads which are inclined to creativity. Second, it would contribute to the quick official registration of already made inventions, without plaguing red tape, protecting in so doing the sacred copyright of the inventor. And, third, it would indicate the means of the effective introduction, with the greatest return, of innovative proposals in the national economy.

Indeed, on paper everything is simple. But now the long awaited draft of the Law on Inventive Activity in the USSR has been submitted for national discussion. The plenum of the Central Council of the All-Union Society of Inventors and Efficiency Experts, which was held in Moscow on 10 January, should have become one of the important stages of this discussion. The plenum, without a doubt, was an event, but, it seems, on a slightly different level than it appeared to its organizers. The authors of the document had prepared for individual remarks and specifications, but they could hardly have expected that the plenum would nearly unanimously come out against the proposed draft as a whole. Some

statements were distinguished by extreme vehemence, a cool analyst would appear against the general background like a white raven. L.I. Danilov, winner of the Lenin Prize and the USSR State Prize, honored inventor of the USSR, and an engineer of the Cherepovets Metallurgical Combine, expressed the common opinion: "If such a Law comes into force, this will be an irreparable blow to invention."

What upset the plenum delegates to such a degree? In the draft of the law a good attempt was made to turn the invention into a commodity, which the inventor can dispose of at his own discretion. For this purpose author's certificates are being abolished and, as in the majority of countries, patents are being introduced. The inventor, who wishes his proposal to be officially registered, after the submission of an application requiring payment and the completion of an examination requiring payment should pay a duty for the patent (a tentative amount on the order of 100 rubles per operation, and perhaps more, is mentioned) and renew it every year. If the patent is officially registered abroad, the patent holder pays the duty once again from his own pocket and in foreign currency. Here the state assumes the obligation to protect the copyright of the patent holder (a new institution is being introduced—the patent court), while in case of introduction the reward increases substantially as compared with the situation existing today: 5 percent of the revenue for 20 years as against 2 percent of the saving and for 5 years.

Everything would be fine, but a whole load of questions remain without explanation. First of all due to the high duty school children, students, and retirees, who simply cannot afford the annual upkeep of a patent, are automatically cut off from inventive activity. And what is one to do with so-called dual patents, when the inventor and the enterprise, at which the invention was made during working time, directly act as joint owners? No matter what words are proclaimed in the draft about the parity of two such joint authors, it is clear that in case of a disputable situation this will be a struggle of Goliath and a dwarf. But 95 percent of all inventions are assigned to the category of job-related inventions. And it is totally unclear how to share rights, when for one joint author the invention is a job-related one, while for another it was made as a hobby. Who here will be first, who will be number two? They are life situations, which are encountered at every step, but in the draft there is not a word about them.

Money for the inventor is not an end in itself. However, it can be a very effective stimulus. In the opinion of Candidate of Technical Sciences B.I. Ushakov, the explosion of the creative activity of the masses during 1924-1931 (a tenfold increase of patents) is connected with the progressive law on invention, which was in

effect at that time, envisaged the economic independence of inventors, and became a short-lived thorn in the skin during the era of the administrative command method of management. Should we not return in the search for what is new to the well-forgotten old?

Of course, it is good that an increase of the reward for introduction is envisaged. But from the draft (and what will there be in reality?) it is already evident that the red tape with obtaining the reward can last for years. The publication of an application is also dragged out to 1.5 years. Is such a procedure being linked with the new economic mechanism of management? By the admission of L.I. Danilov, many experienced inventors have given up: now it does not make sense to engage in creative technical work. "You will not live to see the reward," V.A. Kanchenko, honored inventor of the Ukrainian SSR and a tuner of radio equipment of the Kiev Zavod Arsenal Production Association, joked morosely.

More and more joint ventures are being established in the country. Cooperation with foreign partners is giving rise to a large number of questions in invention activity as well, but in the draft of the law these problems remained unclarified. It is no secret that due to the low effectiveness of the corresponding services we register abroad pitifully few inventions—only 600-800 a year. And we sell, if we are to be precise, licenses, without deriving a large profit. Given our enormous inventive potential the situation must be corrected.

Doctor of Juridical Sciences Professor V.A. Dozortsev reports that the draft in its present form is questionable from the political, socioeconomic, and legal points of view. Except for general declarations and slogans, in the draft there are no specific indications of the increase of the role of public organizations in inventive activity. There is a surprising circumstance: in the document being discussed the All-Union Society of Inventors and Efficiency Experts, the only organization that actually helps inventors, is not mentioned once. But is it really not the job of public organizations along the line of the democratization of all aspect of life to determine the most promising inventions for introduction or to conduct talks with foreign partners? It is another matter that the councils of labor collectives for this should exist not on paper.

And the fact that the draft of the law, as V.A. Dozortsev noted, is obviously at variance with the recently adopted amendments to the USSR Constitution, looks simply like a strange thing. It is possible for a long time yet to list the fundamental remarks on the published document. Deputy Chairman of the State Committee for Science and Technology I.M. Bortnik, one of the authors of the draft, undertook to respond to them. He cited the good wishes of the members of the working group and the large amount of processed domestic and foreign experience. However, the counterarguments of the speaker did not convince the audience.

The fact that actually 1 month was allotted for the discussion of the most important document, evoked general bewilderment. What is the hurry? For the submitted version, as it turned out during the discussion, is quite raw. The decision to address on behalf of the plenum of the Central Council of the All-Union Society of Inventors and Efficiency Experts to the Presidium of the USSR Supreme Soviet a request on the extension of the period of discussion of the draft of the Law on Inventive Activity to 1 July 1989 was adopted by an overwhelming majority of votes. And there is another request: the inventors, who had gone through fire and water when drawing up various documents, ask that there be published a code of acts under the law, which, in their opinion, can reduce to naught the best law.

Inventor Criticizes Law 18/40121 Moscow *PRAVDA* in Russian 12 Jan 89 p 2

[Article by Candidate of Technical Sciences Docent P. Khlopenkov, the author of about 100 inventions, under the rubric "We Are Discussing the Draft of the Law on Invention": "A Road to Nowhere"; first two paragraphs are *PRAVDA* introduction]

[Text] Fundamentally new technologies and machines are inventions. Here it is important not only not to lose anything, but also to ensure the rapid selection of the most effective developments for immediate introduction.

Will the draft of the Law on Invention, which is being discussed, in its present form contribute to this? On the contrary, it will lead, in my opinion, even farther to a deadlock with respect to all the basic indicators.

What is called "deferred examination," which, I believe, is totally unsuitable for the form of management, which exists in our country, is being introduced. In the West in the situation of a keen competitive struggle firms are forced to pursue effective inventions. In our country for the present, unfortunately, inventions are only an abstract value for the state and attract very poorly the attention of those who determine technical policy in the sector and at the works.

Does the draft of the Law accomplish the main task—the increase of the quality of examination, which now, as is known, is at an extremely low level? In this area nothing is changing. But we have unlimited possibilities, which also make it possible to accomplish this task promptly, moreover, without additional allocations.

A good half of the specialists of the highest skills in all sectors of science, technology, and the national economy work at the higher educational institutions of the country. The planned workload of an educator in addition to directly educational work also includes so-called state budget scientific research work. Considerable time—a third of the total available time—is allotted to the

educator for it. The analysis of applications for inventions is essentially the most creatively meaningful process. In my opinion, it makes sense for educators to conduct state budget research not on, as a rule, abstract material, but on concrete material—on the examination of applications for inventions. This will provide a twofold benefit: teachers will obtain quicker access to the latest development and, while analyzing them, will be able with greater effectiveness to improve the educational process. While patent services will acquire tens of thousands of specialists of the highest skills, moreover, free of charge.

And another thing. The examination should without fail be secret—according to a number, and not according to surnames, which is necessary for the elimination of the most harmful practice—"the examination of surnames," and not the essence of the application. Here all the applications should be submitted personally, and not through an organization—in order to eliminate unfounded joint authorship and to present the premature, legally inadmissible divulgence of the essence of the invention. Now due to their inadequate scientific potential the experts of the All-Union Scientific Research Institute of State Patent Examination need the conclusions of institutions and people, who do not have anything to do with the invention. In many countries this is prohibited, for it leads to the premature divulgence of its secret.

In my opinion, the purpose of the division of preliminary examination should be changed. The most prominent scientists, who are capable of establishing the effectiveness of a claimed technical solution, should work in this subdivision. In the total flow of applications, as experience shows, less than 2 percent are especially effective inventions. It is necessary to "catch" them first of all, but this is difficult.

One should also look into the concept of an "unobvious" technical solution. No one properly knows what this is. Everything or nearly everything is based on well-known principles. Therefore, when the expert wants to, but cannot refuse the issuing of an author's certificate in a legal manner, he will resort to this trick, which it is practically impossible to refute. If one wants so much to have this paragraph, it should be developed by the addition: "to prohibit rejection for this reason, if the proposal ensures the obtaining of a fundamental positive impact, which is achievable by existing technical means."

The attempts to maintain patent services at the expense of inventors also do not stand up to criticism. The "duties," which figure in the draft of the Law, are appropriate in case of an active introducing practice, which we do not have, and on the indispensable condition that all the revenues in case of the introduction of an innovation or its sale abroad will become the property of the inventor.

In the Law, I believe, it is necessary to envisage the creation of the material base of the State Committee for

Inventions and Discoveries—to single out several specialized plants and design bureaus in order to produce prototypes for competitive evaluation.

Letters of Inventors Published
18140121 Moscow SOTSIALISTICHESKAYA
INDUSTRYIA in Russian 20 Jan 89 p 2

[Letters to SOTSIALISTICHESKAYA INDUSTRYIA under the rubric "The Law on Invention: Your Opinion?"]

[Text] A Game With One Goal Post?

Several innovators, having become familiar with the draft of the Law on Inventive Activity in the USSR, have begun to worry that a game with one goal post might begin. The inventor, they say, will devise innovations, while the state will immediately begin to manage them as if we innovators live not in this very state and work not for the sake of its good.

Let us think about the main thing. About how, for example, to make creative technical work in our country truly national creative technical work. In Japan all workers study in special courses, which develop creative activity. We also have such courses, but they encompass mainly engineers, while they have no time for workers. And they "go through" in those lessons the rules of filling out all kinds of blanks and applications. Can this really urge a person on to an interesting idea? Short-term courses on creative technical work are needed for the entire working class.

And a second thing. Centralization within reasonable limits is a good thing, supercentralization is trouble. It seems to me that due to supercentralization in our country such a situation, when practice, science, and the inventor do not seek each other, but, like the characters of a fable of Krylov, each pulls the cart of creative technical work in his own direction, has now also formed. We cannot by an order from above make these three forces work in one team. Thus, is it perhaps worth giving them greater autonomy, so that they would come to the aid of each other not by order, but owing to necessity?

If we now look at the draft of the Law on Inventive Activity from the standpoint of these aims—the stimulation of national creative technical work and the rejection of supercentralization—it is possible to perceive in the draft many debatable things.

The USSR State Patent Fund, it seems to me, is not needed. Let us try to forecast the situation. The fund, of course, will have a board. Tomorrow we will discover that there are not enough assets for all the requirements of inventors. Hence, we will have to single out some priority inventions, on the support of which the patent fund will be spent. But who is to determine the priority? Oh, the very same officials from the board!

By organizing the State Patent Fund, instead of decentralization we are creating another bureaucratic superstructure over the inventor. An entirely different matter is the regional funds of the financing of inventive activity, from which an innovator can count on concrete assistance.

As it seems to me, the period indicated in the draft, which separates an idea from its introduction, is also drawn out significantly. Let us look at paragraph 2 of Article 13 of the draft of the Law. Why should an inventor wait 3 months, until the administration of the enterprise gets a move on and submits an application for the invention? In exactly the same way it is not clear why in paragraph 3 of the same article now the enterprise should wait for the author once again 3 months. The next article of the draft of the Law—again 3 months appear. While in Article 24, where it is a matter of the issuing of a patent after the consideration of a protest against the decision on its issuing, a period is not stipulated at all. That is, if someone tries well, he can regularly send protests, and will a patent never be issued at all?

Of course, to expect that with the passage of the Law on Inventive Activity enterprises will organize a real hunt for inventors, in order to introduce immediately in production everything devised by them—one need not hope for this. In many respect the economy itself should still be restructured, in order to become receptive to the innovations proposed by inventors. But the fact that the Law on Inventive Activity will successfully blend with a number of other measures on the improvement of the economy, is indisputable.

[Signed] Corresponding Member of the USSR Academy of Sciences K. Ragulskis, scientific supervisor of the Vibrotehnika Center attached to Kaunas Polytechnical Institute

Kaunas

Lines From Letters

Article 57 "The Liability for the Violation of the Rights of the Authors of Inventions" threatens criminal liability in cases of "the appropriation of authorship" or "the compelling of joint authorship," while failing to mention how the real author will be able to fight for his rights. But, apparently, considerable money, which it will be possible to obtain only from a "Maeccenas," will be required for obtaining a patent and keeping it in force. Will they not begin to give it only in exchange for "joint authorship"?

[Signed] L. Rodzinskiy, engineer

Lines From Letters

An anti-inventor, anti-author spirit is sensed in this version of the draft of the Law. There are too many omissions and reservations. For example, the duties (Article 26). Neither their amount nor the list of actions, for which they are collected, nor the procedure of payment is known. But it is well known to everyone what is

done with any law by what are called "acts under laws." The question of duties is too serious for it to be farmed out to the Ministry of Finance.

[Signed] Candidate of Technical Sciences L. Molchanov, inventor

Doubts and Hopes

Within the working group, which prepared the draft of the Law on Inventive Activity in the USSR, representatives of the All-Union Society of Inventors and Efficiency Experts were not included. True, they participated in the discussion of all the versions of this document. And for the sake of objectivity it should be said that the majority of their remarks were taken into account. But not all of them.

For example, in paragraph 1 of Article 6 the concept "invention" becomes known through such features as the technical solution of a problem, novelty, an unobvious nature, and production applicability. In other words, the draft brought this concept somewhat closer to its exposition in international treaties and agreements. But in the European Patent Convention in the definition of the concept "patent" the feature "the technical solution of a problem" is absent. It is absorbed by the broader concept "industrially applicable solution."

This was done not by chance: the feature "the technical solution of a problem" is vulnerable, since it does not have scientific substantiation. For example, in conformity with paragraph 5 of the same article, a microbiological method, methods of treatment, diagnosis, and prevention, as well as strains of microorganisms can be the objects of an invention. It is clear that it is hardly possible to group them with "technical solutions."

The concept "an unobvious nature," which is cited in Article 6, also arouses doubt. Its definition affords the experts of the All-Union Scientific Research Institute of State Patent Examination extensive freedom for subjective appraisals. "Obviousness" for state patent examination can nearly always be unobvious for the applicant. Therefore, it would be correct to dwell on the term "inventive level" as the most comprehensible and accepted one in the world.

In our Law the concept "invention" should be formulated in the following manner: "An industrially applicable solution, which is new and is based on an inventive level, is recognized as an invention."

The proposed definition will require the corresponding changes in the subsequent paragraphs of Article 6 as well. It would be possible to state them as follows:

"2. A solution is new, if before the date of priority of the application the essence of this solution has not been publicly revealed in the USSR and abroad.

"3. A solution has an inventive level, if on the date of priority of the application it does not follow from the previous level of equipment, which is known in this area.

"4. A solution has production applicability, if it is useful and can be used in the national economy of the country at the moment of its development or in the future."

The wording of Article 12 raises a fundamental objection. The issuing of a patent for an invention jointly to the author and an enterprise can lead to the infringement of the rights of the author of the invention. If, for example, the enterprise is a monopolist—it alone, the only one in the country, manufactures this product—it may turn out that for the sake of preserving adjusted production it is better for it to reject the use of the invention. In this case the author, who works at this enterprise, is powerless to change anything. He is not only left without a reward—he also does not have a chance to offer his invention to anyone.

The "dual patent" undermines the foundation of the exclusive right and significantly complicates the situation, when a Soviet citizen and a foreign firm might be the owners of an invention. In this case it is totally unclear what rights, which are connected with the invention, the partners will be able to exercise independently, and what ones they will be able to exercise only in consultation with each other. The common joint ownership of an invention, the regulation of which always presents significant difficulties in practice, since joint ownership is practically indivisible, is appearing. Moreover, the Fundamentals of Civil Legislation do not provide for the joint ownership of an individual citizen and the state.

In this connection it is proposed to state paragraph 2 of Article 12 in the following wording: "If the activity of the author of an invention, who works at the enterprise, was aimed at the solution of precisely the problem, during the elaboration of which the invention was developed, the enterprise can have a simple license to this invention, with the drawing up of a contract on the amount of the received share of the profit from the use of the invention."

There is no clarity in the understanding and presentation of such an innovation as the USSR State Patent Fund (Article 45). This is assets of the state budget, revenues from the sale of licenses, the duties that are collected in conformity with the Law, fines that are levied for the violation of a patent, and various deductions... This is also a completely new formation with a new management staff. It seems that a different statement of the article, which eliminates the lack of clarity, is necessary.

The last item of paragraph 1 of Article 46 is obviously aimed at the infringement of the rights of authors of inventions, since they do not have means of production. And if there is a simple license, they might not obtain anything from the enterprise. The author should have guarantees, and not only the opportunity to turn to the court.

[Signed] V. Smirnov, chief of the Division of the Defense of the Rights of Authors of the Central Council of the All-Union Society of Inventors and Efficiency Experts

Moscow

Lines From Letters

The granting of the exclusive right to the use of an invention to the author does not delight me. It is obvious that the State Committee for Inventions and Discoveries has the greatest possibilities in the organization of introduction. And the most correct approach is seen in it becoming the full owner of inventions and being economically interested both in introduction and in the sale of licenses.

As for the rights of inventors, it is possible, in my view, to reliably protect them by the inclusion in the Law of two provisions. The first is that any decisions on the use of an invention in the USSR or abroad are made only with the consent of the author. The second is that the state enterprise, which uses an invention, is obliged to inform the author in good time about the results.

[Signed] Candidate of Technical Sciences V. Pekelis, honored inventor of the Belorussian SSR

Minsk

Bureaucracy Obstructs Introduction of New

Aviation Material

18140104b Moscow PRAVDA in Russian 28 Dec 88 p 3

[Article by V. Fridman, a CPSU member since 1943 (Moscow): "When Will I Get an Answer?"; first paragraph is PRAVDA introduction]

[Text] In 1983, the new aviation material ABOTI-82 successfully underwent state tests. It was recommended for use instead of series-produced material, because, in comparing the two, ABOTI-82 has a weight advantage of up to 32 percent.

The introduction of ABOTI-82 was disrupted through the fault of a group of scientists from the All-Union Scientific Research Institute of Aviation Materials and others, who had monopolized the development of similar materials and took an obstructionist position with respect to the new material, which was developed without their participation and was accepted for state tests in spite of their active opposition. Such a position found the support of the Ministry of the Aviation Industry and, to much regret, even in the staff of the CPSU Central Committee.

My repeated appeals to the CPSU Central Committee went unanswered. Only with the assistance of PRAVDA did my letter of 17 January 1987 advance. However, instead of an objective scientific and technical evaluation, bureaucratic games of conferences and protocols,

where only the opponents of ABOTI-82 were widely represented, that is, the decision they needed was ensured in advanced, began. At that time I decided to appeal to the 19th All-union Party Conference.

I do not know what procedure was established at the 19th party conference for the examination of the letters addressed to it. However, my letter, which also contained, in particular, criticism of the style of work of the staff of the Central Committee, was not examined by anyone except the workers of this staff. On 19 July 1988 they called me by telephone and communicated literally the following: "Your letter to the 19th party conference was examined by the CPSU Central Committee. The issues stated in your letter were considered earlier; we do not consider it necessary to return to them. Consider this communication an official response to your appeal to the party conference."

Is it really not clear that such a form of response to an appeal to the Central Committee, especially to the party conference, gives rise to the irresponsibility of the people who carry out the examination of letters to the highest party instances?

So that it is no longer only and not so much a matter of the scientific and technical aspect of the question and the ambitious unprincipled position of the group of scientists as it is a matter of the style of work of the corresponding units of the state and party staff.

At the same time it seems to me that there follows from the foregoing the need for the establishment in the structure of the USSR Council of Ministers of a special organ, which would carry out the organization of the extradepartmental examination of scientific and technical questions in all instances, when it is necessary to preclude an unobjective decision under the influence of the narrow departmental interests of individual ministries or enterprises, scientific research institutes, and groups of scientists, which belong to their system.

Lithuanian Laser Lab Repairs Agriculture Equipment 18140104a Minsk SELSKAYA ZHIZN in Russian 30 Nov 88 p 4

[Article by Yu. Stroganov under the rubric "In the Laboratories of Scientists" (Vilnius): "The Laser Helps"]

[Text] The workshop, where we are, is for the present the only one in the republic. Although here they also repair tractors and other agricultural equipment, you will not see heavy machine tools and will not hear the roar of iron, repair is under way, but there is silence. The crackling is barely audible. As if something is frying in a frying pan. They are putting in order the clutch of a mower. The part actually fries. Placed in a special clamp, it slowly rotates, while from above from an optical device the very finest hot

beam pierced it like a needle. The part was sprinkled with a powder, which, being sintered, turns into a high-strength silvery alloy. The clutch was reconditioned and, what is more, as specialists assert, became more reliable than a new one. I had heard a lot about the miraculous potentials of the laser, while here I was convinced with my own eyes of its effectiveness. They usually discarded as clutch in such condition.

The "workshop," rather the laboratory of laser processes, is at the Institute of Physics of the Lithuanian SSR Academy of Sciences. Doctor of Technical Sciences R. Kanapenas directs it. While the "repairman," who controls the complex unit, is junior scientific associate M. Vaytkaivichius. Together with colleagues he has begun the saving of several tens of aged imported mowers, parts for which proved to be extremely scarce. We were also witnesses of the start of operation. Owing to the laser the machines will return to operation.

Scientists have considerable experience in similar work. For the 3d year 400 T-150K tractors with laser-hardened transmission gears are working in the fields of the republic. Since then there has not been one breakdown. While previously without laser hardening the gears served only a season. The data of the laboratory, where physicists of the Academy of Sciences together with representatives of the Lithuanian SSR State Agroindustrial Committee are working on the problems of increasing the life of agricultural equipment, testify: after laser treatment the strength of parts can increase by ninefold.

But, of course, the tasks of the department are much broader. Its associates are working on problems within the Lazery Scientific Production Association of the Lithuanian SSR. Physicists are working on the development of new technologies. R. Kanapenas displays as if an ordinary metal pipe. It provides an annual saving of more than 100,000 rubles as just 1 enterprise. I examine it carefully. The fine perforations attract attention. So that is it! The laser turned the pipe into a filter, which it is possible to use in water wells, as well as for the purification of water at livestock complexes, in heat networks, and at boiler houses. Such a filter does not require expensive brass screens and wire made of stainless steel and nonferrous metals. Moreover, the capacity of the automated laser machine tool for its production is fourfold greater than the exchange filters being produced.

An automated laser complex for the hardening of the cutting edges of blades, which are used for the cutting of reinforcement rods and sheet metal, has also been developed. While a few days ago the work on another order of the State Agroindustrial Committee was finished: the design of a laser machine tool, by means of which it will be possible to increase significantly the reliability of the cutting tools in machines for the processing of vegetables, was completed and turned over to production.

Instrument Making Industry To Curtail Foreign Technology Sales
18140101 Moscow KOMSOMOLSKAYA PRAVDA in Russian 1 Dec 88 p 4

[Article by L. Repin: "The Keys to Discoveries. Notes From the Science-88 International Exhibition"]

[Text] Here is an old etching from the times of the Middle Ages—the laboratory of the alchemist. An old man in a stooping pose over a table crammed with test tubes, flasks, and retorts. In front of him is a simple tool: a scale, forceps, tweezers. That is all, I dare say. The microscope had not yet been invented. It is clear that the astrologer—the colleague of this researcher—for the same reason also does not have a telescope. The time of the amazing tools, which in an unprecedented manner extended the boundaries of the worlds of opposites—the microcosm and the macrocosm—had not yet arrived. Mankind merely has to experience joyous amazement at the news about the drop of water, which was inhabited by a large number of living creatures, and about the other planets, which like its earth course around the luminary.

Time has left that age far behind. What for the man in the etching was the future, for us has turned into the present. The tool of science has become different. It has made it possible to reach different depths and distances. It has become powerful and nearly omnipotent. You will not manage without the restriction "nearly": it will never become omnipotent. But what has been displayed in the walls of the exhibition, which took place in Moscow on the Krasnaya Presna, is amazing. In all 26 countries, including the Soviet Union, are displaying the latest achievements in the area of scientific instrument making. It turns out that we also have something to display. Some instruments—ostensibly the latest word of our achievements, in reality ones that became obsolete long ago, obsolete already by the moment when they were just being contemplated—were displayed just recently at the Exhibition of National Economic Achievements. And only a few of our instruments were able to compete successfully on the foreign market. But the most amazing thing, perhaps, is that once again we had to purchase instruments which had been devised in our country! This is explained by simple imprudence and the inability and, perhaps, the reluctance to consider: we sold, and hastily, the "know-how"—for they gave a million!—but then, when in accordance with this "znay-kak" [know-how] they made instruments and sold them to us, we were no longer surprised. But the product, which was made in accordance with the "know-how," is worth no longer \$1 million, but \$1 billion.

President of the USSR Academy of Sciences G.I. Marchuk spoke about this at the exhibition. Now, taught by cruel experience, we will not sell "know-how." Except to our close and tried partners. Another trend, the president said, has also formed in this most important sector of instrument making: previously, so to speak, exchange in

kind—"buying-selling"—was the main thing, now, inasmuch as science is becoming an international, integral concept, cooperative developments are appearing in the forefront. At the exhibition there are a number of examples of our international cooperation, and not only with CEMA countries. The Institute of Oceanology of the USSR Academy of Sciences jointly with the Finnish Holming Joint Stock Company is developing instruments and devices for the study of the ocean; the Ivanovo Tochpribor Production Association is displaying at the exhibition the Enervis Complex for tests of specimens of metals and alloys, which was developed together with the Italian firm Ceast.

Cooperation in such an intricate and difficult matter as scientific instrument making is a phenomenon, which is due to and was stimulated by the times themselves. It has also emerged in our country. Vladimir Popov—the young manager of the Spektr temporary interinstitute collective of the Siberian Department of the USSR Academy of Sciences—and I spoke about this. Here, incidentally, is another trend of the times: a young man, who has neither titles nor degrees, but has everything necessary to become a manager—knowledge, energy, and the ability to understand people and to entice them in work—was made the head of a large collective.

"What happened, and is happening now," Popov said to me, "is that we do not have scientific instruments, they are urgently needed, but design bureaus are offering what became obsolete back about 10 years ago!"

"Of course," I agreed, "this is equivalent to advancing modern science by means of the tools from the legacy of alchemists."

"So then," Popov continued, having nodded, "at design bureaus they often even do not know what instruments science needs."

"And all the same they work zealously on something and tirelessly develop something. Like the majority of our shoe factors, for example, which irrepressibly produce lace-up shoes, which one would be ashamed to offer Australian aborigines."

Popov and his entire youth collective, which was united from different institutes, know what instruments science needs. In a truly incredible time—just 4 months after they organized the Spektr collective—a general-purpose instrument, which does not know analogs in our country and in many respects surpasses foreign instruments—and, first of all, in speed, compactness, and easy and efficient linking to a computer—had already been developed. In just 0.001 second this multichannel analyzer of spectral information provides the parameters of more than 1,000 points of the optical spectrum. Incidentally, not only the optical spectrum: it is possible by means of it to study X-radiation, as well as electron and ion flows. In other words, the instrument of the young designers is creating unique opportunities for scientific research. For

example, it is possible to regard the luminous radiation of volcanos during their eruption as practically unstudied, although it bears a large amount of most valuable information. So then, the new instrument makes it possible to read instantaneously the spectral indices of the radiation of a volcano.

Incidentally, instruments for studying our planet make up a separate section at the exhibition and, although all of them are first of all tools of scientific research, many of them may also prove to be irreplaceable in exclusively ground spheres. Here is the laser displacement meter, which was developed at the Moscow Mining Institute: it makes it possible to monitor the stability of rocks and to predict their shifts.

Here is the side-looking radar, which was designed at the Institute of Radio Physics and Electronics in Kharkov and is intended for studies of the surface of the earth from space. It is possible to use it for the solution of real ice problems in the Arctic and the Antarctic. Here is the bottom digital gauge of the temperature and its various gradients in the bottom layer of the sea, which was built at the Geology Institute of the Kola Affiliate of the USSR Academy of Sciences.

The arsenal of scientific tools in the medical and biological section is vast. Thus, the Linkey multichannel photometer, in addition to exclusively scientific research, is especially effective in case of the mass diagnosis of various diseases of man, particularly such diseases as AIDS and hepatitis. A high level of execution draws attention to a large number of our other instruments, which use laser technology, the technology of extra low temperatures, and low-frequency ultrasound in surgery. In no case is it possible to group them with what we have become accustomed to calling "window dressing"—what it is possible to see only at an exhibition; the majority of the instruments are being used by scientists in their work today.

The exhibition makes it incumbent to think and instills the hope that science of the end of the 20th century is ready to take a leap into the future. And who can tell whether our distant, so far even unplanned descendants will bend over a photograph—of course, not an etching—in which a modern research laboratory will be depicted, and whether they will not exclaim while examining the equipment of our scientists: "But how much they knew how to do, and how much they managed to do!"

**Latvian Academy of Sciences President on
Republic MNTK's
18140103 Riga SOVETSKAYA LATVIYA in Russian
16 Dec 88 p 1**

[Interview with President of the Latvian SSR Academy of Sciences Bruno Andreyevich Purin by SOVETSKAYA LATVIYA correspondent E. Pletikos: "The Roads Which Science Is Choosing"; date, place, and occasion not given; first paragraph is SOVETSKAYA LATVIYA introduction]

[Text] No one disputes the role of science in the restructuring of the national economy and the development of the economy. However, the pace of the introduction in production of the discoveries and research of scientists and new technologies, materials, and equipment is still far from the optimum pace. Many obsolete systems are hindering the successful work of scientists. Our correspondent E. Pletikos talked with President of the Republic Academy of Sciences B.A. Purin about the means of overcoming these shortcomings.

SOVETSKAYA LATVIYA: Bruno Andreyevich, please describe the present stage of the work of the Academy of Sciences.

B. A. Purin: We are concentrating the basic forces on the priorities directions in the area of basic and applied research. Here the scientific growth of young people and the increase of their role at the academy and cooperation with the higher school in the development of educational scientific production complexes are playing a large role. The increase of the efficiency of republic interbranch scientific technical complexes (RMNTK's) and the search for new forms of the organization of the introduction of the achievement of science in the national economy, including the judicious combination of state and cooperative principles, hold an important place.

For the strengthening of the scientific coordinating role of the academy we are striving to consolidate its experimental base and to develop special design and technological organizations and pilot enterprises and the engineering and technological center. The settlement of these questions required the development of the democratization of the scientific organizational activity of the academy and its institutions and the increase of the role of our departments in the management of scientific institutions. As before, the necessity of excessive consultations and the fulfillment of obsolete decrees and instructions are interfering with the matter. The poor conditions of the everyday life of scientists are hindering the attraction of new forces.

The priority directions of our work were specified after the 27th CPSU Congress by the General Assembly of the Academy of Sciences. Now within the framework of the decision, which was made at that time, several essential emphases have been made: the food question, ecology, power engineering, and the social sciences. We are trying

to coordinate the research programs of institutes of the academy, VUZ [Higher Educational Institution] collectives, and other scientific institutions, primarily of the biological and economic type.

It is impossible to conceal the urgency of ecological problems. The last scientific session of the General Assembly of the Latvian SSR Academy of Sciences was devoted to this question. The situation, which has formed in the republic, is also posing the problem of power engineering as one of the key problems when formulating the concept of cost accounting regional socioeconomic development. The development and introduction of waste-free and energy-saving technologies, the sharp decrease of the materials-output ratio of works, and the use of industrial and agricultural waste products are directly linked with this.

In the area of the social sciences the direction was indicated by the 19th party conference of the CPSU. Here the efforts are aimed at the elaboration of an integral concept of the development of Soviet society and scientifically sound prospects and the formation of the socialist legal state. The thorough analysis of current national policy, especially questions of the sovereignty of the republic, is acquiring extremely topical importance in the republic.

In all spheres basic research will, as before, be financed through the budget. However, starting next year a new system of planning and financing is being introduced. A transition is being made from the financing of the activity of institutes as a whole to the financing of problems and themes, with the competition of scientific collectives on a competitive basis. Unfortunately, in the mechanism of this system not everything has so far been worked out; therefore, the transition period will be very difficult for us.

If we speak about the plans for the future, the necessity of establishing a number of new institutes: a microbiology institute, an ecology center (with the rights of an institute), an architecture institute, and a mathematics institute, is obvious.

SOVETSKAYA LATVIYA: But how has the establishment of republic interbranch scientific technical complexes affected the speeding up of the introduction of scientific achievements?

B. A. Purin: Problems still remain here. The financing of basic research will now be accomplished through state orders of ministries and departments and economic contracts with enterprises. Unfortunately, the development of the standards necessary for this has been dragged out. The radical economic reform is being implemented slowly, and for this reason the advantages of the new mechanism of management and the system of administration have not been put completely to use. The judicious combination of state and cooperative forms in

science might help. The subsequent activity of interbranch scientific technical complexes should probably also be developed in this direction.

It is necessary to say that the republic interbranch scientific technical complexes have already acquired some experience and, in spite of the hindering structural framework, have been of definite benefit. Thus, the Lokalnyye informatsionnyye seti Republic Interbranch Scientific Technical Complex has performed economic contractual work worth 500,000 rubles; the Latviyas biotekhnologiya Republic Interbranch Scientific Technical Complex has developed a hormone, which is necessary for animal husbandry, and has already produced more than 10,000 vials. A new ferment for ensilage has been produced, the duplication of bioenergy plants has been started. The introduction of the scientific developments of the Latvantikor Republic Interbranch Scientific Technical Complex has yielded a significant impact. But, of course, we expected more. Of course, there were and are many obstacles. A portion of them have been overcome. But many are still hindering the matter.

The changeover of institute cost accounting special design and technological bureaus to the new system of financial and economic activity will increase significantly the effectiveness of the work on the introduction of the results of scientific research. The economic basis of such special design and technological bureaus of the new type should be cooperative, while they will be managed by the corresponding institute. The first steps have already been taken.

SOVETSKAYA LATVIYA: The recently established Union of Scientists of Latvia can make a definite contribution to the development of science in the republic. What do you expect from it?

B. A. Paris: The consolidation of the scientific forces of the republic. The union can promote the closer contact of scientists of the academy, higher educational institutions, sectorial institutes, and planning and design organizations not only within their specialties, but also in the organization of the exchange of opinions between scientists of different fields of knowledge (for example, between scientists of the natural and social sciences) in the region. This will contribute to the strengthening of the creative atmosphere in scientific organizations, departments, and laboratories, to the development of the free exchange of opinions, and to the increase of the standards of debates.

The development of the practical work on the establishment of joint collectives on a cooperative or other basis, which would contribute to the speeding up of the solution of a number of urgent problems of the national economy of the republic and first of all ecological problems, remains an unsolved problem. The Union of Scientists can do much for the improvement of the conditions of the everyday life of scientific associates.

This would contribute to the increase of their prestige and the efficiency of work and would attract talented young people to science.

SOVETSKAYA LATVIYA: And a last, personal question. Today you have, as they say, a round date. What would you wish yourself on your birthday, beside the understood "health, successes in labor, and happiness in personal life"?

B. A. Paris: I would like to engage more in scientific activity proper, to get out if only once to go hunting. Unfortunately, the mania for endless meetings, which has been repeatedly branded from all rostrums, is still not decreasing. And I would also wish that the plans on the capital construction of the experimental base of the academy and their furnishing with advanced equipment and apparatus, first of all computer hardware, would finally be finished. You see, how modest it is—it is a matter not of the increase, not of the exceeding, but simply of the observance of the already adopted plans. Alas, the remainder principle, which, incidentally, has also been repeatedly branded, for the present is still in effect.

But if the remainder is spent on science, it is difficult, of course, to speak in earnest about leading growth. The change of such a situation and concern for the people of science would be the best gift to every scientist.

Issues at Armenian Polytechnical Institute 18140123 Yerevan KOMMUNIST in Russian 23 Dec 88 p 2

[Interview with Corresponding Member of the Armenian SSR Academy of Sciences, Doctor of Technical Sciences Yuriy Levonovich Sarkisyan, rector of Yerevan Polytechnical Institute, by KOMMUNIST correspondent V. Aloyan under the rubric "Behind the Line of the Decision of the Armenian CP Central Committee Plenum": "Yerevan Polytechnical Institute: The Policy of Modernization"; date not given; first three paragraphs are KOMMUNIST introduction]

[Text] Yuriy Sarkisyan, a 47-year-old corresponding member of the Armenian SSR Academy of Sciences, was elected rector of Yerevan Polytechnical Institute. During the secret vote 233 of the 234 members of the expanded scientific council of the institute supported his candidacy, which was put forward by 29 chairs and the overwhelming majority of faculties of the largest higher educational institution of the republic.

Yu.L. Sarkisyan is a doctor of technical sciences and was in charge of the Chair of the Theory of Mechanisms and Machines of Yerevan Polytechnical Institute. His efforts on the development of the theory of the designing of complex mechanical systems, including robotic systems, have found extensive international recognition. He was awarded a prize of the American Society of Mechanical Engineers for the best work. He has been repeatedly

invited to deliver lectures and to conduct joint scientific research development at leading scientific centers of Great Britain and the United States. He is the author of more than 100 scientific works, including 4 monographs. He has 25 inventor's certificates.

Our correspondent V. Aloyan met with Yuriy Sarkisyan and asked him to tell what he imagines the future of the largest higher educational institution of the republic to be like.

KOMMUNIST: Yuriy Levonovich, first of all we want to congratulate you on your election and to wish you fruitful work in the responsible position.

Yu. L. Sarkisyan: Thank you. I am well aware of what an important mission at what a difficult moment the collective of our institute assigned me. I will exert every effort to justify the confidence of colleagues and the student body.

KOMMUNIST: At the September Armenian CP Central Committee Plenum the question of the quality of the training of certified specialists and the planning of VUZ [Higher Educational Institution] admission was urgently raised. What is your program in this direction?

Yu. L. Sarkisyan: You see, for long years our institute, like the entire higher educational system of the country, was developed by the extensive means. More than enough priority tasks accumulated. The engineer today is by right considered the central character of scientific and technical progress. For precisely he is called upon to achieve the real changes in equipment and technology, the totality of which will be qualified as scientific and technical progress. Is today's "average" graduate of an engineering higher educational institution able to take upon himself such a transforming role? The answer is, unfortunately, no. Therefore, now, first of all, it will be necessary to outline a master plan of the further development of the institute. It should take into account, on the one hand, the necessity of the efficient use of the existing personnel potential and the prospects of development of the base faculties and, on the other hand, the pace, trends, and regional peculiarities of the industrial and social development of the republic. Accordingly, the entire structure of personnel training will have to be improved. In order to switch to a more advanced—individual—system of work with students, we will bring in line with the optimum norm—1:8—the ratio of the number of instructors and students. Today there are nearly 11 students per instructor.

The increase of the quality of the knowledge of students is closely connected with the laboratory base, which today does not satisfy to any extent the requirements of the educational process. To this it is necessary to add the obsolete, often formal approach to production practice and the significant decrease of the role of course and graduation designing. It is unnecessary to say that all this is hitting hard the level of our graduates. I see one way

out of the formed situation—the resolute acceleration and intensification of the integration of the educational process with production. It will be necessary to devote all efforts and attention to the establishment of educational scientific production complexes, which will encompass the affiliates of chairs at enterprises, joint scientific research laboratories, and production sections. Then it will be possible to carry out the final stage of training directly at enterprises.

We will assist our future students in earnest. At the institute it is necessary to open a school with a polytechnical emphasis, at which the level of teaching of physics and mathematics will satisfy the requirements of the institute. All the conditions for the correct choice of an engineering specialty will be created for school children. Starting with the first day it will be necessary to begin the program of the computerization of the entire educational process.

The improvement of the training of future engineers is impossible without the creation if only of the minimum conditions for the educational process. The shortage of educational facilities has developed for Yerevan Polytechnical Institute into problem number one. Suffice it to say that there are 4.57 square meters of space per student. This is the worst indicator among higher educational institutions of the republic, which is two-fifths as good as the average union indicator. Now we are giving lessons during 3 shifts and all the same continue to experience of shortage of 50-60 lecture halls. Of course, we will begin to seek internal reserves. But this can correct the situation only in part. However, I see a fundamental settlement of the question in the speeding up of the construction of the new buildings of the Avanskiy Educational Complex, which has essentially developed today into a full-scale long-term construction project, while for this we need our own construction base. As for the precise determination of the number of specialists needed by the republic, I see the solution of the problem in the mechanism of flexible planning on the basis of bilateral direct contracts of the institute with industry. True, such a system is operating already today, but its role thus far is trivial.

KOMMUNIST: At the plenum the extremely inefficient operation of VUZ graduate studies and the unsatisfactory work of scientific subdivisions were also spoken about. What can you say in this regard?

Yu. L. Sarkisyan: Our institute is probably also not an exception, since the amount and effectiveness of research work do not fully conform to the scientific potential which Yerevan Polytechnical Institute has. I think that at our institute it is necessary to place special emphasis on the development of basic research. Here I see reserves in the efficient use of the scientific potential of chairs, especially general theoretical chairs, and problem laboratories and the dissertation works of graduate students and in the expansion of exploratory scientific work on an economic contractual basis.

Highly skilled specialists in practically all the technical sciences work at Yerevan Polytechnical Institute. This is affording us a luck opportunity to conduct integrated scientific and technical development at the meeting point of various disciplines. In this respect the development of scientific ties between chairs and faculties is of great importance.

The system of institute graduate studies, which is obliged to train engineers of the highest category with the recently introduced qualification degree "research engineer," should also be restructured.

KOMMUNIST: In recent times I have repeatedly had occasion to hear about the necessity of the democratization of the administrative and management machinery at the higher educational institution....

Ya. L. Sarkisyan: I generally believe that the authoritarian bureaucratic mechanism of management at our higher educational institutions—"from the top down"—is one of the basic causes of the "skidding" of the reform of higher education. It has become a kind of damper, in which any initiative from below dies out. It is practically impossible to restructure the educational process without the democratization of this mechanism. The decentralization of the process of management should become the basic means of the democratization of the VUZ organism.

First of all I have in mind the quick development of the self-management of faculties, inasmuch as precisely the faculty is the unit which should carry out the integration of training with production. A decisive role in the planning of admission, in the development of the material and technical base, in the organization of scientific research work, and in matters of the distribution of financial and material resources should also belong to the faculty; it should pursue an independent personnel policy. At the same time it is necessary to increase significantly the guiding role of the scientific council of the institute. Precisely it should discuss the strategic tasks of the development of the institute, formulate the corresponding long-term programs, and monitor their fulfillment.

KOMMUNIST: Since the conversation has turned to the democratization of management, what would you say about the interrelations between students and instructors, between students and the administration, especially under the present difficult conditions?

Ya. L. Sarkisyan: While instructing a student, we should always remember that the formation of the engineer as a specialist takes place at the same time as the formation of his individuality. These are two aspects of the general educational process. Until quite recently we often forgot this, and that is why the difficulties, with which we have now had occasion to be faced, should not surprise anyone.

The heretofore unprecedented social and civic activity of our students at times faces us with unexpected problems.

However, now it is necessary not to curb this activity, but to try to aim it in the proper direction.

They are trying to explain everything, which is now taking place with students, by the increase among young people of the sense of national self-consciousness. However, in order for this lofty feeling to develop into a stable position in life, a serious educational foundation is needed. From this standpoint, I think, it would be advisable to introduce a series of humanities subjects, particularly a detailed course on the history of the Armenian people, special courses in sociology, ecology, and others.

It is also necessary to find means for the elimination of a certain psychological gap between the administration, instructors, and students. And events of recent times have shown that such a gap exists. There is one way out of the formed situation—to develop student self-management and to broaden their participation in the management of the institute at all levels. To extend the functions of student public organizations. They should in practice become the spokesmen of the interests of the student body and develop into the connecting link between the management of the institute and the student body.

I am confident that many of the questions that worry us today will be raised and will find their solution at the All-Union Congress of Workers of Public Education, which is being held these days.

S&T Progress, Problems in Uzbekistan
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[Article by Doctor of Economic Sciences Valeriy Ivanovich Saakov, director of the Scientific Research Institute of Scientific and Technical Information and Technical and Economic Research of the Uzbek SSR State Planning Committee, under the rubric "Problems of the Acceleration of Socioeconomic Development": "Scientific and Technical Progress Is the Leading Unit of the Strategy of Acceleration"]

[Text] The radical restructuring of the national economy and the raising of productive forces to a qualitatively new scientific, technical, and economic organizational level constitute the basis of the acceleration of the socioeconomic development of the country and the switching of the economy to the path of intensification. As the 27th CPSU Congress stressed, "it is impossible to achieve fundamental changes on the former material and technical basis." The requirement of the substantial increase of the work on the creation of an advanced technical level of production was heard with full force at the 19th All-Union Party Conference. Only the extensive use of new construction materials, advanced equipment, advanced technological processes, and flexible systems

and the complete mechanization and automation of production can ensure a resource-saving type of development of the economy, the prompt updating of the output being produced, the decrease of its resource intensiveness with respect to all elements of the aggregate expenditures, and a sharp turn toward the increase of the efficiency of social production.

The acceleration of scientific and technical progress is of particular urgency for the further development of the national economy of Uzbekistan. The intensity of the disproportions, which have accumulated in our republic, is complicating substantially the overcoming of the inertial processes which are hindering the switching of the economy to the path of intensification. Suffice it to say that the average annual growth rate of the national income decreased from 3.3 percent during 1981-1985 to 0.7 percent during 1986-1987, which is a third as great as for the country as a whole. The productivity of national labor in 1986 came to only 98 percent of the 1985 level, while in 1987 it decreased by another 0.4 percent, while on the average for the country it increased by 2.4 percent.

Such negative trends as the increase of the capital-output ratio and materials-output ratio of the national income, the decrease of the effectiveness of capital investments, and the increase of the gap between the growth rates of the national income and fixed production capital, the capital-labor ratio and labor productivity have appeared in the republic.

The prevalence during previous years of extensive factors of growth, which is common to the entire national economy of the country, and the evaluation of the results of the activity of enterprises mainly according to quantitative indicators undoubtedly left a mark on the nature of the development of the economy of the republic. Often the technical and economic characteristics of the capital, which was newly placed into operation, did not have qualitative differences from the capital which operated at enterprises. Under the conditions of the increase of the cost of the extraction of raw materials, the evaluation of the activity of the machine building complex according to the output of products in tons, and the poorly developed base for the production of construction materials the cost of new capital increased rapidly as compared with its productivity. Little attention was devoted to the improvement of the structure of machine building products, to the maintenance of the sector's own base at the necessary scientific and technical level, and to the mechanization and automation of operations. Thus, Uzbekistan accounts for 2.5 percent of the industrial potential of the country and only 1.3 percent of the automatic lines (their share is the lowest in the chemical and petrochemical industry—0.9 percent, and in machine building and light industry—0.8 percent each). The inadequate degree of the industrialization of production was also responsible for a higher proportion of manual labor than on the average for the country. During the 11th Five-Year Plan the increase of labor productivity by 1 percent was achieved by the increase of

the capital-labor ratio by 7 percent, which testifies to the low technical level of the equipment and technology, which were being introduced.

Serious scientific and technical problems have accumulated in the sectors of industry and the agroindustrial and construction complexes. In a number of them the technical level remains low and the expenditures of manual labor are high. Energy-saving technologies and nontraditional sources of energy are being poorly introduced. About 70 percent of the technological processes are unproductive. At the same time the production apparatus of the republic is being modernized slowly: the average annual rate of its replacement in industry during the 11th Five-Year Plan came to only 2.7 percent, while in 1987 it came to 2.1 percent. With the maintenance of such a pace 35-40 years will be required for the complete modernization of the production apparatus of industry of Uzbekistan.

As a consequence of the formed reproduction disproportions and the slow pace of the retirement of productive capital in the sectors of the national economy of the republic an obsolete and worn out pool of equipment and mechanisms continues to operate. Thus, at enterprises, which produce machines for agriculture and light and the food industries, a fourth of all the equipment has already been operating for more than 20 years. An adverse situation has also formed in light and the food industries themselves, where the share of actually obsolete equipment comes to about 23 percent. A similar picture is also observed in other sectors of industry of the republic.

New equipment is being introduced extremely slowly at enterprises. In 1987, for example, more than half of them (53 percent) did not engage in this at all. The situation is being aggravated by the inefficient use of advanced equipment: last year of the 96 robotized technological complexes, which exist in the republic, one-fifth did not operate, while the NC equipment at several enterprises was used only 60 percent of the time.

The inadequate efficiency of the very means of the mechanization and automation of production, computer hardware, and means of the modernization of operating equipment is being added to all this. And here is the result: whereas during the 10th Five-Year Plan the annual economic impact from the introduction in industry of new equipment per ruble of actual expenditures came to 62.6 kopecks, while the spending on the conditional release of 1 worker came to 20,300 rubles, during the 11th Five-Year Plan they came respectively to 48 kopecks and 30,100 rubles (the effectiveness of the introduction of new equipment decreased by 23 percent, while the expenditures on the release of 1 worker increased by 48 percent). A similar situation is thus far also being maintained during the current, 12th Five-Year Plan.

At 323 of the 726 enterprises, which carried out the introduction of new equipment, an increase of labor productivity was not achieved at all, while as a whole the share of its increase due to measures on scientific and technical progress comes in industry of the republic to only 22 percent.

Consolidated calculations show that more than 50 percent of the overall decrease of the output-capital ratio is a consequence of the slowing of scientific and technical progress. Meanwhile the share of the expenditures on the introduction of scientific and technical measures in the total value of the fixed production capital being put into operation is decreasing (it declined from 25 percent in 1981 to 12 percent in 1986). The replacement of industrial productive capital by the introduction of advanced means came in 1986 to only 8.4 percent.

The low technical and organizational level of the production potential is seriously hindering the solution of the problem of the quality of the output being produced—one of the most urgent problems for the economy of Uzbekistan. Today the highest quality category is conferred on less than a third of the total volume of output which is liable to certification. Only 23.1 percent of the products, which are produced by enterprises of the machine building complex of the republic, which is called upon to ensure the acceleration of scientific and technical progress, correspond to the world technical level. Thus far the tractors, tractor seeders and cultivators, centrifugal pumps, and ginning equipment, which are produced in the republic, do not have the State Emblem of Quality. Many industrial products, which are produced in Uzbekistan, do not correspond to not only the world, but also the leading domestic level.

Serious shortcomings exist in the work on the updating of the items being produced. The Uzbek SSR accounts for less than 1 percent of the products, which have been assimilated for the first time in the USSR, while the share of models of new types of machines, equipment, apparatus, instruments, and automation equipment, which have been developed in the republic, comes to only 1.2 percent of their total number in the country, including 2 percent for electrical engineering, 7 percent each for agricultural machinery and equipment for light industry, and 0.4 percent for instruments, automation equipment, and computer hardware.

To a certain degree the increase of the technical level of the production apparatus of Uzbekistan was checked by the insufficiency of investments. In spite of the fact that the growth rate of capital investments, as a rule, was somewhat higher than in the country as a whole, given the leading growth of the population it could not simultaneously ensure both the rapid creation of workplaces and the modernization of the existing potential and, hence, the overcoming of the lag behind the unionwide level with respect to the per capita amount of fixed capital. Now there is 48.5 percent less of it per inhabitant of Uzbekistan than on the average for the country.

Here it is impossible not to note the following. While in industry of the republic the increase of the production potential occurred primarily due to new construction, to the detriment of the retooling of operating enterprises, which led to the substantial exceeding of the standard service life of industrial capital, in agriculture the incomplete amortization of means of labor was observed. During the 11th Five-Year Plan, for example, agricultural machinery and equipment were often written off after 2-3 years of operation instead of 8-9 years according to the standard. Considerable national economic assets, the assimilation of which in industry, according to the calculations of specialists, would have made it possible not only to raise its technical base to the level of present requirements, but also to ensure an increase of the industrial potential by one-third and to additionally derive more than 4 billion rubles of national income, were diverted for the replacement of prematurely retired fixed capital.

The weakness of the very base of the sectors of the investment complex holds not the last place among the factors which are checking the development of the scientific and technical revolution in our republic. Approximately 4 percent of the capital investments and 5 percent of the construction and installation work of the country are being assimilated in Uzbekistan. However, the investment complex of the republic accounts for only 2.3 percent of the capital investments, including machine building—2.7 percent, the construction materials industry—4.1 percent, and construction—3 percent. The significant importation of machinery and equipment, the stable growth of the resource intensiveness of construction products, the dragging out of the time of the assimilation of capital investments, and the high level of unfinished construction are the consequence of the quantitative and qualitative lag in the development of the investment complex behind republic needs.

The successful solution of the problems of accelerating scientific and technical progress is determined to a decisive degree by the effectiveness of investment policy. The program of its improvement, which was specified by the 27th CPSU Congress, is distinguished by an orientation toward the priority development of the sectors, which ensure scientific and technical progress and the qualitative transformation of the material base and structure of production. An important place in the implementation of the outlined program belongs to Uzbekistan, where the manifold increase of the output of construction materials and machine building products has to be ensured in a short time. The development of the named sectors in the central regions of the country is being checked by the acute shortage in them of manpower resources. In Uzbekistan—one of the few regions of the country, which are provided with manpower—the expansion of science- and technology-intensive works, which are characterized by a relatively low cost of workplaces, will contribute to the best use of manpower resources and to the assurance of the full employment of the able-bodied population in social production.

The improvement of the sectorial structure of capital investments in the indicated direction is also creating the prerequisites for the surmounting of such negative trends in the development of the economy as the decrease of the output-capital ratio and the effectiveness of capital investments and social production as a whole, inasmuch as industry, particularly the sectors of machine building, is characterized by a relatively higher level of the yield on capital and the output-capital ratio as compared with the average national economic indicators.

Inasmuch as the acceleration of scientific and technical progress essentially depends on the state of the technical base of the construction complex, it is expedient to increase the share of the capital investments being allocated here. It should be emphasized that, in spite of its inherent shortcomings, construction is one of the most efficient sectors of physical production of Uzbekistan: it accounts for only 3 percent of the total number of employed people and 5.9 percent of the production potential, but produces 11.7 percent of the national income and is achieving the highest level of the output-capital ratio and labor productivity.

In previous years the tendency for the share of the construction potential in the total amount of fixed production capital of the republic to decrease emerged. As a result the national economy is incurring appreciable losses, not only direct, but also indirect. Inasmuch as construction is the most important sector of the investment complex, the lag of its development leads to the dragging out of the time of the placement of facilities into operation and the assimilation of introduced capacities, the checking thereby of the introduction of advanced technologies in the national economy, the increase of above-plan construction, the slowing of the yield on capital, and, as a consequence, the failure to obtain significant amounts of national income. This requires a fundamental change of the policy of developing the sector, first of all the quickest technical modernization and the leading increase of its production potential.

Thus, the structural changes being implemented in the economy of Uzbekistan should ensure the priority development of the sectors, which are of vital importance for the acceleration of scientific and technical progress and the successful solution of socioeconomic problems. The main directions here are the optimization of the structure and balance of the national economic complex and the assurance of its ability to be reorganized quickly and flexibly in conformity with advanced changes in science, engineering, technology, and social and individual needs. Moreover, the improvement of structural policy should encompass all the units of the national economy. Only in this case will its effectiveness within both all social production and its individual sectors increase. Let us recall that resource conservation is one of the main evaluation indicators of the progressiveness of structural policy, as it is of investment policy as a whole.

The elimination of the shortcomings of past years is an extremely important, but not the only task in the matter of accelerating scientific and technical progress. The need has arisen for its goal program planning, which encompasses all the stages of the improvement of the technical base of enterprises, sectors, large territorial production complexes, and the agroindustrial complex: the development of means of labor, their placement into operation, the use and timely replacement of capital.

Goal program planning, for which the systems approach to the study of complex national economic problems is the basis, makes it possible to break the problem of accelerating scientific and technical progress down into a number of relatively local subproblems and to outline measures on their solution. It is most important to ensure the interconnected settlement of such questions as the increase of the effectiveness and goal-orientation of basic research, the pilot experimental preparation of production and the introduction of new equipment, the comprehensive improvement of technologies, the improvement of the structure of fixed production capital, and the technical modernization of the national economy.

The necessity of using the systems approach to the solution of global national economic problems for a long time now has not been a topic of discussions. However, in practice until most recently the compiling of comprehensive scientific and technical programs both in the republic and beyond it was often reduced to the formulation of local measures on the improvement of some aspects or others of economic activity. Apparently, not everyone realized that without clearly specified targets, without their comprehensive decomposition along the vertical and horizontal connections of the controlled system (the construction of a "tree of goals"), and without the broad backing of each subgoal by the entirety of resource limitations (the formulation of a "tree of resources") no program can be sufficiently sound and be called a comprehensive program. For the 12th Five-Year Plan 12 republic scientific and technical programs are envisaged in the Uzbek SSR. Meanwhile, in the planned scientific research work the share of objects of new equipment and technology comes respectively to 9 and 21 percent, while the share of new materials, strains of agricultural crops, and breeds of animals comes to 4 percent. Do not the reasons that a significant portion of the completed research, which has been accepted by clients, does not find use in production and more than 60 percent of the results being introduced prove to be ineffective, lie here? The decrease in the last 5-6 years of the number of received inventor's certificates by a third testifies to the trouble in the area of technical solutions.

The restructuring being carried out in the country urgently needs the business partnership of science and practice for the purpose of achieving the highest end results. The strengthening of the national economic approach in the planning of scientific and technical progress is the most important task. The prerequisites of

the improvement of the use of the scientific and technical potential, the integration of science and production, and the concentration of the forces and assets of scientific research and planning and design organizations on the solution of key national economic problems are incorporated in this.

The orientation of theoretical research toward the formulation of long-range solutions and further steps on the acceleration of scientific and technical progress will serve the increase of the effectiveness of the scientific potential. The research, which concerns the methods of the formulation and implementation of regional scientific and technical policy, the choice of long-range scientific and technical problems, and the setting of priorities in this area, should be intensified. Along with this the successful implementation of scientific and technical programs is inseparably connected with the improvement of the plan of the development of science and technology and the coordination of its tasks with other sections of the national economic plan.

It is necessary to ensure the conformity of the pilot experimental base of developer organizations and the pilot production of enterprises, which manufacture industrial products, to the present requirements. It is important that the plans on scientific and technical progress would be aimed at the creation of the necessary production potential and at the fundamental increase of the technical and economic level of production. Here, too, one cannot manage without the priority of scientific and technical programs and plans of the development of science and technology at all levels of management, beginning with the national economic level, including the development of a set of standards for the compiling of plans. Only by strengthening the goal orientation of research is it possible to increase the degree of scientific soundness of long-term and long-range planning.

The further increase of the effectiveness of science and the speeding up of the introduction of its achievements in the practice of management require the improvement of the organizational forms of the performance of work. "Resolute steps are required in the improvement of the management of scientific and technical progress and the surmounting of departmental barriers," it was noted in the report of M.S. Gorbachev at the 19th All-Union CPSU Conference. Among the most important directions in this area, which were named in the report, are the formation of scientific technical complexes, engineering centers, and temporary collectives for the accomplishment of special-purpose tasks; the establishment of a complete cycle: scientific research—engineering and technology—investments—production—marketing—service; the judicious combination of state and cooperative forms of the organization of science.

The central place in the program of accelerating scientific and technical progress in Uzbekistan should belong to the set of programs of the technical modernization of the sectors of the national economy. The improvement

of productive forces is impossible without the supply of production with advanced technologies and automation equipment and without its complete mechanization, further electrification, chemicalization, robotization, and computerization. Scientific and technical policy should also be aimed at overcoming the nonuniformity and incompleteness of the technical equipment of production, which are today one of the basic causes of the decrease of the output-capital ratio of the operating potential. Substantial reserves lie in the improvement of the organization of auxiliary processes. The time of the introduction in production not of separate types of machinery, machines, and equipment, but of systems of them for the complete mechanization and automation of both basic and ancillary works has come. Precisely such an orientation of technical policy creates a real basis for the comprehensive intensification of production.

The replacement of the inefficient equipment, which is operating at present, with advanced, high-performance equipment is a priority task in accomplishing the technical modernization of the national economy. Moreover, the equipment being introduced in its technical and economic indicators should surpass by 2- to 2.5-fold the equipment being replaced. For the successful accomplishment of this task it is necessary first of all to make a general inventory of the operating potential, especially machines and equipment, in order to estimate the scale of the forthcoming modernization and to distinguish the fixed capital, which is to be written off or modernized due to obsolescence and wearing out.

The certification of the technical level of production will make it possible, first, to formulate a long-term comprehensive program of retooling (of the enterprise, the sector, and so forth); second, to outline a plan of the improvement of the use of the operating potential; third, what is especially important at present, to strengthen the feedback between the producers of investment products and their users in the formation of the demands on the latter.

An important place in the set of outlined tasks belongs to the determination of the rational parameters of the replacement of obsolete capital. In previous years it was carried out in Uzbekistan extremely unevenly: whereas in agriculture and in part in construction up to a fourth of all machines and equipment were annually retired, in industry only 1.2-1.4 percent were. This circumstance was specially pointed out in the speech of M.S. Gorbachev in the Uzbek CP Central Committee to management personnel of the republic on 8 April 1988. The longest service lives of fixed capital were characteristic of such leading sectors as machine building and the food industries, where the period of use of the apparatus of 35-40 years was established by the pace of its replacement.

The use in industry of means of labor, which are objectively liable to replacement, often created the appearance of the expansion of reproduction. In reality the

diversion of a significant portion of the workers for unproductive labor on old equipment reduced the possibilities of the expansion of production due to more effective directions of the use of manpower resources. The capacities being newly put into operation were assimilated extremely slowly. Suffice it to say that the enterprises, which were put into operation in 1984, at the end of 1987 provided less than a third of the output envisaged by the plan. Inasmuch as new construction and the consolidation of operating works were the basic forms of the expansion of the reproduction process, the share of the capital investments in the retooling and modernization of enterprises was extremely small.

In the future one must reject the many stereotypes of management, which determined the primarily extensive, expenditure means of developing the economy of Uzbekistan. So that by 2000 the service lives of the fixed capital of the republic would conform to the rational norms, it is necessary to increase the annual retirement of its obsolete portion on the average to 5-6 percent. Of course, one cannot do without new construction and the expansion of operating enterprises, but the increase of production capacities in this way should be carried out, first, not to the detriment of the retooling of enterprises and, second, only on the condition that the reserves of increasing the output of products in a more economical way have been exhausted. In the future it is necessary to increase the annual pace of the replacement of capital to 10-12 percent and in machine building and construction to 14 percent and the pace of retirement to 6 percent. As a result of speeding up the elimination of worn out and obsolete equipment it is necessary to reduce its share in the total pool in 1995 to 10 percent, which will ensure a substantial increase of the technical level of production.

It is possible to speed up the modernization of the production apparatus, if the reproduction structure of capital investments is changed. In so far as the 27th CPSU Congress named the retooling and modernization of operating production as a characteristic trait of the new five-year plan, the proportion of the capital investments for these purposes should steadily increase. In our republic it is necessary to increase it, according to the estimate of specialists, to 55-58 percent.

In many respects the content of the retooling and modernization of enterprises is now also changing. One must not permit, as was frequently done in the past, worn out equipment to be replaced with obsolete equipment, which, as a rule, is accompanied by the absolute and relative increase of new workplaces and the repair and maintenance costs.

It is also necessary to reject selective modernization, which did not justify itself in the past, when only individual obsolete machine tools and mechanisms were replaced. But inasmuch as at present it does not seem possible to supply simultaneously all consumers with the necessary new equipment, the careful study by ministries and planning and supply organs of the situation at

enterprises, the degree of readiness of the production sphere for the acceptance of innovations, and the possibilities of ensuring the high utilization of the capital being introduced should precede its distribution. Here priority should be given today to the sectors and works, which are crucial for technical progress, as well as to the ones which are a bottleneck in the solution of the problems of the further development of the national economic complex of Uzbekistan.

While talking about speeding up the process of replacing obsolete equipment, it is impossible not to speak about the problem of its efficient use. Now it most often is dismantled, is scrapped, or lies idle. Meanwhile, a significant portion of it could still serve at small enterprises and at affiliates of production associations. Therefore, the proposal on the organization of the buying up and wholesaling of equipment, which was previously in operation, merits attention.

The introduction of waste-free and low-waste technological processes, which ensure resource conservation, is of great importance for extending the intensification of production. This is especially urgent for machine building—the sector which determines the pace of the acceleration of national economic development. It is necessary to implement in it a set of gradual steps on the replacement of traditional technologies with laser, electrophysical, electrochemical, and other advanced methods of the working and welding of metals.

The extensive use in machine building of plastics and other synthetic materials, as well as the introduction of powder metallurgy are contributing to the significant saving of metal. The use of parts, which were produced by methods of the latter in agricultural machine building of the republic, particularly at the Tashkentskiy traktorny zavod imeni 50-letiya SSSR Association, made it possible to provide an annual economic impact of 100,000 rubles. When producing parts and assemblies by such methods the losses of metal are reduced to one-seventh to one-fifth and the product cost is reduced to one-third to one-half. Unfortunately, in recent years the tendency for the pace of the use of these methods to slow emerged, and today only 30 enterprises of the republic are using metal powders as strengthening coatings.

Meanwhile, the active introduction of resource-saving technologies is assuming greater and greater importance, especially for the sectors which are characterized by a high materials intensiveness of products. The maximum use of the components of source raw materials expands the raw material base, contributes to the relative slowing of the pace of development of the extractive sectors, and is conducive to the increase of the efficiency of social production. And, what is not less important, it reduces the contamination of the environment with production waste.

The fundamental acceleration of scientific and technical progress at the present stage cannot be achieved without

the close interconnection of its technological and economic aspects. In spite of the decisive role of the development of productive forces, technological processes cannot be implemented in the national economy without the active influence of the mechanism of the management of scientific and technical progress.

The gradual accomplishment of the qualitative transformation of the production potential of the national economy of Uzbekistan should be used as much as possible as a factor of the obtaining of high economic results. Under the conditions of the radical restructuring of the management of the economy, which is now being carried out, the influence on the economic aspect of scientific and technical progress on the end results is increasing significantly. This is connected with the fact that the qualitative transformation of productive forces should become in the shortest time a source of the self-support (samokupayemost) of scientific and technical progress and of such an increase of its effectiveness, which would be an adequate contribution to the achievement of an increasing pace of expanded reproduction. The ineffectiveness of the economic aspect of scientific and technical progress in the recent past had the result that the technical level of production was lower than the potentially possible level of the development of productive forces. A significant amount of high-performance equipment and various types of latest machinery was accumulated in the sectors of the national economy of the republic, but a significant portion of them was used extremely inefficiently. The consequence of this is enormous losses and the decrease of the output-capital ratio.

Among the main causes of the formed situation is the imperfection of the economic mechanism. In light of its restructuring, which is taking place today, and the new possibilities of scientific and technical progress the economic aspect of the latter in many cases proves to be unprepared, high results from the use of new equipment are not being ensured. For the elimination of the contradictions between the technological and economic aspects of scientific and technical progress it is necessary to strive for the adequacy of the economic mechanism to the objective requirements of the constantly developing productive forces. As the radical reform of management is carried out, the economic mechanism will undoubtedly have a greater and greater influence on the increase of the technical and economic level of production. Such is the dialectic unity of the economic and technological aspects of scientific and technical progress. The knowledge of this unity will make it possible to create in good time in social production conditions which are conducive to the necessary changes.

In turn, the acceleration of scientific and technical progress is creating the prerequisites for the achievement of high social results and profound changes of the working and living conditions of the Soviet people. The extensive introduction in production of the advanced achievements of science and technology is increasing the

level of the mechanization and automation of technological processes, is eliminating manual labor, and is making greater demands on the professional level of the working people and on the system of the organization of their labor.

Under the conditions of the high level of supply of the republic with manpower the steps of a socioeconomic nature, which are being taken, should be oriented toward the full realization of the constitutional right of each person to work. Therefore, the acceleration of scientific and technical progress in Uzbekistan is inseparably connected with the creation of new workplaces.

In conformity with the decisions of the party and government the combination of the forms and methods of the centralized management of the economy with the broadening of the independence and responsibility of production collectives is an important peculiarity of the present stage of development of our society. The point is that under the conditions of the structural reform of social production and the further multiplication and complication of economic relations centralized management is legitimately being oriented primarily toward the solution of global problems. On the other hand, at the present time, which is characterized by the rapid development of equipment and technology, the demands on efficiency and the speeding up of feedback when making decisions locally are increasing. This is leading to the narrowing of the group of questions, which need centralized management, and to the broadening of the independence of enterprises. Under such conditions the role of self-financing, in conformity with which the development of enterprises should be accomplished by means of their own assets, as well as bank credits, is increasing.

The enterprises of the science- and technology-intensive sectors of industry, which react most sensitively to the acceleration of scientific and technical progress, especially need self-financing. The improvement of the economic mechanism will contribute to the increase of the share of enterprises' own assets in the total amount of capital investments. The assets of the state budget, which are freed in this case, can be channeled primarily into the establishment of fundamentally new directions of the development of the economy, the conducting of basic research, and the building of new enterprises.

A significant role in the retooling of operating enterprises belongs to the amortization fund. Its formation and efficient use should be accomplished on the basis of the correct determination of the wearing out and obsolescence of means of labor. In connection with the planned increase of the scale of the modernization of the latter it is necessary to specify the norms of amortization and in many cases to increase them substantially.

Thus, the maximum use of the available reserves is necessary for the successful technical modernization of the national economy and the increase of its efficiency. But this is impossible without the stimulation of the

initiative of labor collectives. Not by chance is their enormous responsibility for the implementation of the strategic policy of accelerating the socioeconomic development of the country stressed over and over again in party and government documents of recent years. Precisely labor collectives should ensure under the new conditions of management the attaining of leading levels of scientific and technical progress, the radical improvement of the quality of the output being produced, and great production efficiency.

The orientation not simply toward the best technical solutions in the world, which have already been implemented, but toward the evaluations of the trends of development of equipment is becoming a key feature of the present stage of scientific and technical progress. They also make it possible to design it with the aim of leading the achievements of both domestic and foreign research thought.

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National Exposition Demonstrates Chemistry Achievements

18140107 Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Dec 88 p 4

[Article: "The Report of Our Special Correspondents From the Exhibition of USSR National Economic Achievements"]

[Text] In 1987 more than 900,000 square meters of membranes and 328 membrane units were produced. The economic impact from their introduction is 42 million rubles.

Much has been written about the amazing potentials of membranes. But you only have to see their action with your own eyes to be astonished again.

"Are the apples real?" we asked, having noticed the sweat polyethylene bag with fruit.

"What other kind are there?" L. Klimova, senior engineer of the Polimersintez Scientific Production Association, smiled in response. "For a second month now, they are being stored here without a refrigerator, in the light, but as before are juicy and appetizing in appearance."

Membranes purify industrial discharges and desalinate sea water, in the electronics industry by means of them they are obtaining ultrapure substances, they are being used extensively in medicine—from apparatus of an "artificial kidney" to the express analysis of blood.

"While here is a completely new product," Larisa Alekseyevna continued, "the protein beverage concentrates Antey and Samson. They are assimilated in a few minutes and serve as a highly efficient source of energy. Not without reason did our Olympians take such a liking to them."

We are certain that the nutritious beverages would suit the taste of not only sportsmen. Especially as no special raw material is necessary for their production—only whey, which will be found at any dairy plant. But, alas, there is whey, but only a few enterprises have assimilated the beverage. What is the matter?

"The situation, unfortunately, is typical," Larisa Alekseyevna said. "They know about the potentials of membranes, their assortment, and the cost only at exceptional enterprises. This year the first catalog was finally published. It tells in detail about the products of the Membrany Interbranch Scientific Technical Complex—the areas of application of specific types of membranes and their technical characteristics are cited, the address of the producers is indicated. But it is impossible to call this issue complete. In all 18 manufacturing enterprises ignored the inquiry of the publishers and did not send documents for their items."

But it is a pity, advertising is capable of creating real miracles. At the Vladimir Polimersintez Scientific Production Association a group of developers made a membrane which do not suffer from highly concentrated acids and alkalis. The need for such items is enormous, but, of course, no one knew about them. At that time V. Karachevtsev, head of the cost accounting laboratory, decided not to skimp on advertising. It cost about 20,000 rubles. But now there is no end to customers, inquiries are coming from the entire country and abroad. The wage of associates has increased by 3- to 3.5-fold, the amount of the semiannual bonuses comes to 1,000 rubles. It goes without saying, if you want to earn, spend.

In the past 2 years the total discharge of harmful substances into the atmosphere was reduced by 10 percent, while the total discharge from enterprises of the chemical complex was reduced by 16 percent.

At the center of the pavilion there is a small green public garden. Is it an element of the interior? No, it is an exhibit of the Botanical Garden of the USSR Academy of Sciences. Scientists selected and bred the plants, which easily become acclimated in polluted soil and air and trap many harmful impurities. Living "filters"—this is good, it is only disturbing that they would not become in the future the only representatives of our forests and fields.

Specialists of the sector told us with pride: among the enterprises, which are contaminating nature, chemical plants are not at all the leaders, rather they are outsiders—they hold 18th place. Indeed? However, the point is not to rank harmful works—the thing is to get rid of them altogether. And the works of scientists, which are displayed in the section "Environmental Protection," convince us that chemistry can do much for this. After all, for every poison there is an antidote—even pesticides, phenols, mercury, and ions of heavy metals, which frighten everyone, lend themselves to recovery. The exposition tells about various methods—one better than the other. It is all the more regrettable that now mainly ideas and, at best, experimental prototypes are competing. While it is possible to count on your fingers the enterprises, at which truly waste-free technologies and advanced purification methods have been introduced. One of them is the Pervomaysk Khimprom Production Association. A purification system, the capacity of which is sufficient to serve the entire city, operates here. After its start-up the discharge of contaminated water into the river was completely halted. Sewage after multistage treatment goes to the enterprise, then is purified again—the association operates on a close cycle. An automatic system tracks the water quality. From the trapped substances they make fertilizers—worth nearly 5 million rubles a year.

There are also other enterprises, at which they are trying to treat nature with care. Their addresses are indicated at the exhibition. But the chemical complex is enormous, there are few addresses.

It is planned to build 39 new enterprises, which produce drugs, and to modernize and expand 48 operating ones. This will make it possible to increase by nearly threefold the output of products.

The medical section is one of the largest in the exposition. But the exhibit abundance is not longer capable of deceiving anyone—each of us has been in drugstores. Meanwhile the charts, which accompany the exposition, give assurance that 80-90 percent of the demand for drugs has already been met. The curves approach the 100-percent mark in 1993. Hence, in 4 years will there be enough drugs for everyone?

"It is a question first of all of the necessary minimum," L. Dorofeyev, deputy general director of the Medbioekonomika Scientific Production Association, comments on the chart. "These are mainly the preparations which industry assimilated long ago."

It goes without saying that there are different drugs. In case of a cold, for example, it is possible to manage with aspirin, but it is possible to take effective antiviral preparations—the most abundant set of them is displayed at the exhibition. A cold is nothing, here there are remedies for pneumonia, dysentery, asthma, and hepatitis—you would not list all the diseases. Let us take for an example the new method of treating tuberculosis, which spares the body. In order to get medicine to the affected lungs, previously one had to saturate the blood with the preparation—this is dangerous. Specialists of the All-Union Scientific Research Institute of Medical Polymers proposed to deliver the drugs on target—to the focus of the disease. By means of a set of polymer tools it is possible to spray the preparation directly on the pulmonary cavity. But just where is all this? In what drugstores will you encounter it, in what polyclinics and hospitals is it being used?

We know how to make polymer films and aerosols, which replace bandages, resolving threads for surgical sutures, and plastic containers for the transfusion of blood that are no worse than those which they delivered to the victims in Armenia from abroad. At the exhibition there are also thermometers which it is sufficient to apply to the skin. They are simple devices, but at best a third of the demand for them has been met. In short, the exhibits illustrate well the successes of scientists—both medical personnel and chemists. The achievements of industry are less conspicuous.

"The shortage of raw materials, obsolete equipment," L. Dorofeyev laments. "There is no reserve of capacities in order to react flexibly to changes of the demand—enterprises are loaded to the limit."

Let us add that there is also no real economic interest in changing anything. The latest preparations and tools are a burden. This diagnosis is well known, the treatment is also well known—other methods of management are needed.

The assortment of household chemical items numbers more than 800 descriptions, 40-50 new items are annually introduced in production. In all 80 percent of the chemical fibers are used for the production of consumer goods.

One of the exhibition visitors, having looked over this section, did not restrain himself: "In my opinion, they are simply treating us with contempt. Geya, Azura, Modena—what poetic names. But in the store there is no ordinary toothpaste."

We admit that we also experienced similar feelings, having seen the exposition "Chemistry for the Home." We were dazzled by shampoos with exotic additives of peat wax and fennel oil. The fragrance of powdered detergents permeated even the glass showcase. Lipstick of the most fashionable shades were next to elegant cosmetic kits of shadows, deodorants, and rouges.

We were struck even not by the abundance—we were struck by the fact that there were displayed...by no means the latest examples. Many of them, as it turned out, have been produced for a long time, but in ridiculously small quantities. But we had decided—they are new items. All right, you would still think, if you are seeing them for the first time. At the exhibition....

Do you want to learn why toothpaste is scarce? By all means. The little charts next to the exhibits are very eloquent. It turns out that many components, which are a part of the raw materials, in our country are not produced at all and have never been produced.

Things are no better with cosmetics and perfumery. Everywhere there are little charts with stereotype explanations: "The raw materials are not being produced" or "The demand for raw materials is not being met." About eight raw materials are needed in order to saturate the market with perfumes. Seven of them are not produced in our country, the eighth one all the same is available. Only a ton a year is needed, but here, too, "The demand is not being met completely."

The ordinary exhibition visitor is not worried so much by the question "Why is there none?" It is more important for him to know when it will be. For here, at the exhibition, he can see a completely different attitude toward the matter. The exhibits of the Sovitalplastik Joint Venture were brought for inspection directly from the firm store. Excellent toys, plastic dishes, shelves, decorations for rooms.

"Tashkent is already glutted with our products," process engineer I. Panafenova laments. "Soon we will open firm stores in other cities."

Imagine, the chemists from Tashkent do not have problems with raw materials and dyes. And they do not buy anything abroad, from Italian partners. Because of that the prices of items are also moderate. For example, a

delicate rose kit for the bath made up of 6 items costs 20 rubles, while a set of plastic dishes, which any housewife would like, costs 23 rubles.

We left with a nagging question: Is the section correctly named? Chemistry for the home? Or is it chemistry for the exhibition? Besides, the exposition evoked many questions. The main one of them is: When will we see all this abundance not only on exhibition stands, when will it become generally available? For a reply we set off for the headquarters of the sector.

Computer Fair in Sverdlovsk Scheduled for March 1989

18140119 Moscow *SOTSIALISTICHESKAYA INDUSTRIYA* in Russian 18 Jan 89 p 1

[Interview with V. Aristov, general director of the Uralistem Scientific Production Association, by N. Savina under the rubric "Fact and Comments" (Sverdlovsk): "The Computer Invites You to a Trade Fair"; date not indicated; first paragraph is *SOTSIALISTICHESKAYA INDUSTRIYA* introduction]

[Text] The Uralistem Scientific Production Association will hold a trade fair of programs for minicomputers and microcomputers in Sverdlovsk in March of this year. Here is what V. Aristov, general director of the association, relates:

V. Aristov: The trade fair attracts us by the opportunity to establish direct contacts between the developers of programs and their users. It is possible at it to draw up orders for the development and delivery of software. We would determine the demand for our packages of programs and

automated systems and would ascertain to what extent they meet the needs of the national economy.

SOTSIALISTICHESKAYA INDUSTRIYA: Is your organization striving to monopolize the market of programs?

V. Aristov: Of course, we would like this. But we are taking a broader view. We have proposed to show our program developments at the trade fair to organizations, which specialize in this field, as well as to large computer centers, computer clubs, and cooperatives. Today about 50 participants in the trade fair are prepared to offer the users of computer hardware more than 400 programs—as you see, there is a choice. In order to go farther and to fight for the quality of our product, it is useful for developers to know what the competitors have and what the level of their developments is.

SOTSIALISTICHESKAYA INDUSTRIYA: But computer hardware itself, for example, microcomputers, is no less a scarcity than good software.

V. Aristov: Yes, the managers of enterprises often ask where to buy hardware. Our association recently acquired the right to directly carry out commercial export-import operations. So that now in cooperation with enterprises, which have currency assets, we will purchase abroad advanced computer hardware, will furnish it with programs and systems, and will deliver the finished software and hardware complex with an entire set of scientific and technical services on its assimilation and introduction. We have also invited to our trade fair representatives of the foreign firms which are delivering this hardware to our country.

**Ukrainian Council of Ministers Announces
Competition for S&T Projects**
18140122 Kiev *PRAVDA UKRAINY* in Russian
11 Dec 88 p 3

[Article: "The Commission of the Presidium of the Ukrainian SSR Council of Ministers for Questions of Scientific and Technical Progress Announces a Competition"]

[Text] The Commission of the Presidium of the Ukrainian SSR Council of Ministers for Questions of Scientific and Technical Progress announces a competition for the elaboration of the following themes:

To develop a technology and a set of equipment for the harvesting, grading, packing, and transportation of fruits and vegetables, as well as effective methods of their storage.

To develop a technology and equipment for the automated processing of edible raw materials and prepared foods, the cutting, proportioning, weighing, and packaging of the finished product.

To develop a technology and to devise experimental equipment for the production of hard cheeses under the conditions of small farms and family farms.

To develop a set of compact individual biogas units for use in rural areas at remote farms and family town houses.

To develop new methods and instruments of the remote diagnosis of the technical condition of operating underground service lines (water, heat, and gas pipelines).

To develop white pigments and fillers for varnishes and paints, which ensure the replacement of scarce dry zinc and titanium whites.

To develop a subscriber facsimile communications device which corresponds to the world technical level.

To develop efficient wind-powered electric plants in a complex with heat pumps and other transforming devices for individual and collective use.

To develop a technology of the obtaining of composite low-active binders based on the waste products of the metallurgical, chemical, and other sectors of industry, to set up with their use the production of construction materials for dwellings, individual cottages, and garden houses.

To develop the technology and design of biological fermenters for the obtaining of fertilizers on the basis of the waste products of agricultural production.

To develop methods of the real and maximum allowable loads of environmental and production factors on the

human body and the principles of the organization in the republic of the monitoring of foreign substances in food products.

To develop new pathogenically substantiated methods of the treatment of cardiovascular, oncological, endocrine, and eye diseases and the pathology of the ear.

To develop fundamentally new methods of the prevention, diagnosis, and treatment of diseases of the mother, fetus, newborn, and children of various age groups for the purpose of decreasing the indicators of the maternal and child sick rate and mortality in the republic.

To develop an industrial technology of the production of traumatic needles, suture threads, applications, and enterosorbents.

To develop technologies of the production of phytopreparations for the treat of chronic diseases of the gastrointestinal tract.

To develop methods of the early diagnosis and differentiated treatment of allergic diseases of the respiratory organs, including bronchial asthma.

To develop completely implanted intraosseous preparations for the lengthening of extremities in case of the treatment of production and everyday injuries.

To develop biological and chemical technologies and to produce sets of equipment for the treatment of industrial, agricultural, and household sewage, as well as the purification and recovery of production gas emissions.

To develop economical methods of removing toxic substances from the gas emissions of motor transport.

To develop thin-film materials and surface layers for microelectronics and on their basis to develop means of the recording, storage, and processing of information.

To develop power equipment for facilities and systems operating on nontraditional and renewable energy sources, including with built-in systems of electronic control and the optimization and assurance of the reliability of operation.

To develop technologies of the complete chemical processing of mineral raw materials with the use of highly efficient catalytic, membrane, and electrochemical processes.

To develop effective enzyme preparations for the production of pectin, food dyes, and modified starch with set properties of the aromatizers for the obtaining of fructose-glucose syrups and the canning of produce.

Scientific research institutions, higher educational institutions, planning, design, and technological organizations, regional and sectorial centers of the creative scientific and technical work of youth, and other organizations can take part in the competition.

The competition participants send the proposals in the form of a feasibility study (TEO) for the proposed development on the chosen competition theme to the oblast boards of the USSR Union of Scientific and Engineering Societies at the location of the scientific organization for the making of an extradepartmental comprehensive scientific and technical examination. The payment for the examination is made by the organizations which are competition participants.

The conclusion of the examination and the feasibility study are submitted by the organizations to the working group attached to the Commission of the Ukrainian SSR Council of Ministers for Questions of Scientific and Technical Progress at the address: 252008 Kiev-8, Kirova, 12/2. The deadline for the submission of materials is 26 December 1988.

In accordance with the results of the competition the performers of the themes will be selected and the financing of operations will be ensured.

The results of the competition will be published.

The telephone numbers for inquiries are: 293-21-51, 293-40-40.

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